Mixed methods analysis of a multi-strategy, community-wide physical activity intervention: Active Launceston

by

Lucy Kaye Byrne

School of Health Sciences

Submitted in fulfilment of the requirements for the Master of Biomedical Science (M7B)

University of Tasmania, August 2017
CONTENTS

Statements and declarations .................................................................................................................. 4
Purpose statement ................................................................................................................................. 4
  Authority of access .............................................................................................................................. 4
Significance of this research ................................................................................................................ 4
  Statement regarding published work contained in thesis ................................................................. 4
  Statement of co-authorship ................................................................................................................ 4
  Statement of ethical conduct .............................................................................................................. 5
  Declaration of originality ................................................................................................................... 5
Abstract .................................................................................................................................................. 6

Literature review .................................................................................................................................... 9
  Necessity of physical activity for health ............................................................................................. 9
  Physical activity guidelines ............................................................................................................... 10
Why are some people active and others not? ..................................................................................... 12
  Intrapersonal (Individual) ................................................................................................................ 15
  Interpersonal ...................................................................................................................................... 16
  Environment ....................................................................................................................................... 16
  Regional/national ............................................................................................................................. 17
  Global ................................................................................................................................................ 17
  Tasmanian context ............................................................................................................................ 17

Best practice .......................................................................................................................................... 19
  Social marketing ............................................................................................................................... 22
  Communication strategies ................................................................................................................ 23
  Individual counselling ....................................................................................................................... 24
  Working with voluntary, government, and non-government organisations .................................... 24
  Working within specific settings ...................................................................................................... 25
  Environmental change strategies ..................................................................................................... 25

Case studies: Community-wide physical activity projects .............................................................. 26

University community engagement .................................................................................................. 38

The five pillars ...................................................................................................................................... 39

Research question .............................................................................................................................. 41

Primary question .................................................................................................................................. 41

Secondary questions .......................................................................................................................... 41
Hypotheses......................................................................................................................42
Methods..........................................................................................................................44
Active Launceston...........................................................................................................44
  Supportive environments ..............................................................................................45
Mass media ....................................................................................................................45
Community initiatives ....................................................................................................45
Professional support .....................................................................................................46
Research design.............................................................................................................46
Process evaluation.........................................................................................................47
Impact evaluation..........................................................................................................49
Results .............................................................................................................................52
  Process evaluation ........................................................................................................52
    Demographic characteristics from enrolment data ......................................................52
    Personal benefits ......................................................................................................53
    Facilitators of participation ......................................................................................55
    Barriers to participation ............................................................................................57
Impact evaluation ..........................................................................................................58
  Physical activity participation ......................................................................................59
    Intensity of participation ...........................................................................................59
    Sufficiently active for health ......................................................................................60
    Nature of physical activity participation ....................................................................60
    Awareness of Active Launceston ..............................................................................62
Discussion ......................................................................................................................64
  Limitations ..................................................................................................................71
Conclusion ......................................................................................................................73
  Implications for research ............................................................................................73
  Implications for practice .............................................................................................73
References .....................................................................................................................74
APPENDIX 1 – University community engagement (Book chapter) ................................82
APPENDIX 2 – Overall evaluation results (Manuscript for publication) .........................93
APPENDIX 3 – Telephone survey questionnaire ................................................................119
APPENDIX 4 – Examples of advertising material ..........................................................128
Statements and declarations

Purpose statement

The purpose of this research was to investigate if a community-wide physical activity intervention could increase physical activity participation in the Launceston community.

Authority of access

This thesis may be made available for loan and limited copying and communication in accordance with the Copyright Act 1968.

Significance of this research

This novel study has validated theoretical best practice through a multi-strategy community-wide physical activity intervention that has demonstrated an increase in levels of sufficient physical activity for health in the target community. Results of this study are relevant to the health promotion sector and may influence health policy across all levels of government in the future.

Statement regarding published work contained in thesis

“The publishers of the papers comprising Appendix 1, 2 hold the copyright for that content, and access to the material should be sought from the respective publishers. The remaining non-published content of the thesis may be made available for loan and limited copying and communication in accordance with the Copyright Act 1968.”

Statement of co-authorship

The following people and institutions contributed to the publication of work undertaken as part of this thesis:

<table>
<thead>
<tr>
<th>Name</th>
<th>Contribution</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lucy Byrne(^1)</td>
<td>Candidate was the primary author and over a ten-year period established the project, formalised and developed the evaluation and research, secured funding and ethical clearance, developed evaluation tools, managed program delivery and implementation, managed and supported the data collection and analysis, drafted the thesis and finalised the thesis for submission.</td>
<td>92%</td>
</tr>
<tr>
<td>Kathryn Ogden(^2)</td>
<td>Was a co-author of Appendix 1, 2 and assisted with collection of qualitative data and its analysis and presentation.</td>
<td>2%</td>
</tr>
<tr>
<td>Simone Lee(^1)</td>
<td>Was a co-author of Appendix 1, 2 and assisted with quantitative data analysis and presentation of results.</td>
<td>2%</td>
</tr>
<tr>
<td>Greig Watson(^1)</td>
<td>Co-supervisor and co-author of Appendix 2. Supported structure of the thesis and critical review.</td>
<td>2%</td>
</tr>
<tr>
<td>Name</td>
<td>Contribution</td>
<td>Percentage</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Kiran Ahuja</td>
<td>Co-supervisor and co-author of Appendix 2. Provided statistical analysis of quantitative data and supported structure of the thesis and critical review.</td>
<td>1%</td>
</tr>
<tr>
<td>Stuart Auckland</td>
<td>Was a co-author of Appendix 1 and provided input into literature review on community engagement.</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Adrian Bauman</td>
<td>Was a co-author of Appendix 2 by assisting with structure, presentation and critical review.</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>James Fell</td>
<td>Supervisor and co-author of Appendix 2 who assisted to formulate the evaluation process and critical review.</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

1 School of Health Sciences, University of Tasmania, Tasmania 7250, Australia
lucy.byrne@utas.edu.au
simone.lee@utas.edu.au
kiran.ahuja@utas.edu.au
greig.watson@utas.edu.au
james.fell@utas.edu.au
stuart.auckland@utas.edu.au

2 School of Medicine, University of Tasmania, Tasmania 7250, Australia
kathryn.ogden@utas.edu.au

3 Sydney School of Public Health, University of Sydney, NSW 2006, Australia
adrian.bauman@sydney.edu.au

Statement of ethical conduct
“The research associated with this thesis abides by the international and Australian codes on human and animal experimentation, the guidelines by the Australian Government's Office of the Gene Technology Regulator and the rulings of the Safety, Ethics and Institutional Biosafety Committees of the University.”

Declaration of originality
"This thesis contains no material which has been accepted for a degree or diploma by the University or any other institution, except by way of background information and duly acknowledged in the thesis, and to the best of my knowledge and belief no material previously published or written by another person except where due acknowledgement is made in the text of the thesis, nor does the thesis contain any material that infringes copyright.”

I hereby agree to these statements and declaration of originality,

Lucy Kaye Byrne, 18 August 2017
Abstract

Extensive evidence is published on the numerous physical and psychological benefits of physical activity across the human lifespan (Tucker and Carr, 2016). Australia, like other developed countries, has very low levels of physical activity (Australian Bureau of Statistics, 2012). Tasmania has the lowest levels in the country with 69.4% reporting inadequate levels of physical activity participation in comparison to the rest of Australia, which is 67.5% (Population Health, 2013). Australian Physical Activity Guidelines recommend at least 30 minutes of moderate physical activity for adults on at least five days of the week, equating to 150 minutes a week (Australian Department of Health, 2014). Thus, developing effective interventions to increase population physical activity levels is undoubtedly important to the health of Tasmanians. Best practice research recommends that a multi-strategy approach is most effective to increase population level physical activity levels; however, there is little evidence of successful initiatives in peer reviewed literature due to the complexities of effectively measuring multi-strategy community-wide projects (Deakin University, 2012). Therefore, the purpose of this study was to use an interrupted time-series process and impact mixed-methods research design in an attempt to effectively measure the efficacy of a multi-strategy community-wide physical activity intervention in the Launceston community.

Active Launceston was a community-based programme implemented between February 2008 and December 2015 aimed at improving health and wellbeing through physical activity. Active Launceston used a multi-strategy approach to engaging the community and program delivery: supportive environments, mass media, community initiatives and professional support. An evaluation of Active Launceston between 2008 and 2015 consisted of participation statistics, focus groups, stakeholder interviews, a serial online survey (n=734) and a randomised cross-sectional serial population telephone survey of Launceston residents.
Active Launceston’s free activities included diverse programs: dancing, hydrotherapy, archery, orienteering, yoga, tai chi, rock climbing, sailing and laser tag. These initiatives engaged community members ranging in age from 1 to 87 years. Over one-third of participants (35.1%) were aged under 15, while 14.5% were aged over 55. Two-thirds of participants were female (65.8%), and over one-third (37.7%) were health care card holders. Almost half (43.2%) of Active Launceston participants resided in suburbs representing the five lowest deciles of socio-economic indexes for areas (SEIFA), with 19.3% in the lowest decile. Active Launceston attracted 11,887 attendees, who participated in 30,342 sessions, amounting to 38,088 hours of physical activity between 2008 and 2015. Focus groups, stakeholder interviews and the online survey highlighted a range of benefits relating to individual involvement and social engagement.

Process evaluation revealed that there were four ways in which participants perceived Active Launceston had benefited them directly: increased engagement in exercise and activities, health benefits, personal development, and social connectedness. The features of Active Launceston that participants perceived facilitated their participation were: the accessibility and no-cost nature of programs, the friendly and non-threatening environments, the capacity of programs to cater for people with different abilities and specific needs, the focus on complementing other community programs, and the enthusiasm of facilitators. Furthermore, participants described the enjoyment they gained from involvement as a feature that facilitated ongoing engagement.

The overarching impression of Active Launceston from interviews and focus groups was that it was viewed as a unique model that complements existing services (sports clubs, fitness centres, not-for-profit organisations) and successfully carried the additional responsibility of providing advocacy for sections of the community less able to access these types of activities.
Impact evaluation demonstrated that, between 2008 and 2015, there was no change in the proportion of telephone survey respondents who reported that they were physically active in the past 12 months. In contrast, a higher proportion (overall p<0.001) of respondents reported participating in vigorous physical activity in 2012 (IRR 1.67, 95% CI: 1.36 to 2.03, p<0.001) and 2015 (IRR 1.26, 95% CI: 1.01 to 1.56, p=0.03) compared to 2008, with the highest proportion in 2012 (2015 vs 2012: IRR 1.32, 95% CI 1.09 to 1.60, p=0.007).

For respondents participating in physical activity in the last 12 months, there was a gradual increase in the proportion who were sufficiently active for health over the three years. There was a significantly higher proportion achieving sufficient activity in 2015 compared to 2008 (overall p=0.03; 2008 vs 2012: IRR 1.08, 95% CI 0.97 to 1.21, p=0.14; 2008 vs 2015: IRR 1.16, 95% CI 1.03 to 1.29, p=0.01).

The proportion of respondents who were aware of Active Launceston increased over time (p<0.001). Only 31.8% (95% CI 28.23 to 35.81) of respondents were aware of Active Launceston in 2008 compared to 61.33% (95% CI 56.32 to 66.67) and 65.11% (95% CI 59.95 to 70.60) in 2012 and 2015, respectively. Respondents who were aware of Active Launceston were significantly more likely to be sufficiently active for health than those who were unaware of Active Launceston in 2012 and 2015 (p < 0.01).

The findings suggest Active Launceston did support a wide range of individuals to engage in regular physical activity, and increase their level of social engagement. I conclude that establishing multi-faceted partnerships to improve participation in physical activity is an effective option for governments, universities and the community sector. My findings provide a rationale for implementing community-wide interventions that encourage and support people to increase their physical activity levels.
Literature review

This review will examine research regarding physical activity participation in communities. To provide the context for the research questions and hypotheses associated with this thesis, this literature review will outline the necessity of physical activity for health, physical activity guidelines, and it will discuss why some people are active and others are not. The review will outline the difficulties in measuring population-level changes in physical activity and go on to describe what researchers recommend in terms of best-practice project designs. Finally, it will provide a number of case studies regarding population-level physical activity initiatives that are highlighted in peer reviewed literature.

Necessity of physical activity for health

Extensive evidence is published on the numerous physical and psychological benefits of physical activity across the human lifespan (Tucker and Carr, 2016; Lear et al., 2017). Physical activity can support positive human development and support individuals and communities to develop ongoing health promotion and disease prevention behaviours (Boreham and Riddoch, 2001). Physical activity can help prevent some cancers, cardiovascular disease, obesity and diabetes mellitus type 2, and it helps to prevent injuries and falls (Bauman et al., 2002). Physical activity has many other benefits in managing diseases such as numerous mental health conditions, osteo-arthritis and diseases of the immune system (Bauman et al., 2002). Physical activity is important for the growth and development of children and young people and for positive ageing in the elderly (Macera and Ainsworth, 2012).

Physical activity also has a positive association with many social indicators such as the development of social capital (Australian Bureau of Statistics, 2010). In her PhD: Social Capital and Health – implications for health promotion, Eriksson (2011) suggested that social capital encompasses the whole community and contributes to, and becomes a result of,
using a community development approach for health promotion programs [such as physical activity]. Lomas (1998) advocates for the importance of social capital and organised social systems as integral to good health, and he references ‘social relationships’ and ‘how people lead their lives’ as important elements of health and wellbeing. Although more research is required on the direct link between social capital and physical activity (Eriksson, 2011; Legh-Jones and Moore, 2012), it is widely accepted that a positive relationship does exist (Australian Bureau of Statistics, 2010; Legh-Jones and Moore, 2012). Questions posed in this thesis will highlight many of the social outcomes of physical activity interventions.

Worldwide, 31.1% of adults are classified as inactive (Hallal et al., 2012a) and the World Health Organisation (WHO) identifies physical inactivity as a major risk factor across the globe for morbidity and premature mortality (World Health Organization, 2014b); furthermore, approximately 5.3 million deaths per year could be avoided if all inactive people become at least moderately active (Lee et al., 2012). Australia, like other developed countries, has very low levels of physical activity (Australian Bureau of Statistics, 2012), and the state of Tasmania has the lowest levels of all states across the country (Australian Bureau of Statistics, 2007-2008). Thus, developing effective interventions to increase population physical activity levels is undoubtedly important to Tasmania to improve health outcomes and the overall prosperity of the State.

**Physical activity guidelines**

Researchers recognised the need for guidelines on physical activity as early as the 1960s as they sought to guide people on the type, amount and intensity of activity. To begin with, guidelines were developed as clinical tools, concentrating on exercise prescription (Troiano and Buchner, 2012). This changed in the 1980s when the benefits of taking a public health focus started to emerge, and the first physical activity guidelines were released in the United State of America in 2008. In 2010, WHO adopted the American guidelines for its member
countries (Troiano and Buchner, 2012). In Australia, the first physical activity guidelines were released by the Australian Institute of Health and Welfare in 1999. More recently (2014), these guidelines have been updated to also include recommendations on reducing sedentary time and summarised by VicHealth (Table 1) (VicHealth, n.d.).

Table 1. Summary of the Australian guidelines for physical activity and sedentary behaviour (VicHealth, n.d.)

<table>
<thead>
<tr>
<th>Age group</th>
<th>Physical activity</th>
<th>Sedentary behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early childhood</td>
<td>3 hours of light to vigorous intensity activity every day.</td>
<td>No screen time for children under 2 years of age.</td>
</tr>
<tr>
<td>0-5 years</td>
<td></td>
<td>Less than 1 hour of screen time per day for children aged between 2 and 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No more than 1 hour of being sedentary or inactive at a time, except when sleeping, for all children aged birth to 5 years.</td>
</tr>
<tr>
<td>Children and youth</td>
<td>At least 1 hour of physical activity every day.</td>
<td>Minimise sedentary time every day.</td>
</tr>
<tr>
<td>5-17 years</td>
<td>Bone and muscle strengthening activities at least 3 days each week.</td>
<td>Less than 2 hours of screen-based entertainment per day.</td>
</tr>
<tr>
<td>Adults</td>
<td>Between 2½ and 5 hours of moderate intensity physical activity, or between 1½ and 2½ hours of vigorous intensity physical activity each week. Activity on most, and preferably all days. Muscle strengthening activities at least 2 days each week.</td>
<td>Minimise prolonged sitting. Break up long periods of sitting as often as possible.</td>
</tr>
<tr>
<td>18 years and over</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older adults</td>
<td>At least 30 minutes of moderate intensity physical activity on most, preferably all days. Activity each day, in as many ways as possible, doing a range of physical activity. Incorporate activities that promote fitness, strength, balance and flexibility.</td>
<td></td>
</tr>
<tr>
<td>65 years and over</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mota and associates (2002) suggest that it is important to understand the nature of physical activity participation, whether it is structured (formal – organised by a group or a sports club or other organisation), or unstructured (informal – walking on one’s own, walking the dog),
to be able to best develop initiatives to positively affect population-level changes in physical activity. Furthermore, when assessing how much physical activity is beneficial for health, it is important to understand the intensity of physical activity, as vigorous participation is understood to expend energy at a higher rate than moderate physical activity, resulting in greater health benefits (Powell et al., 2011). However, it is commonly accepted that moving people from inactive to being active will have the highest impact on population-level health (Lee et al., 2012; Arem et al., 2015; Lear et al., 2017). While the physical activity guidelines represent the ideal participation levels, they are not being met by the majority of Australians (Australian Institute of Health and Welfare, 2010). Consequently, understanding why some people are active and others are not is of upmost importance. The next section considers the barriers and enablers to physical activity participation.

**Why are some people active and others not?**

There are numerous disparities in the rates of individual participation in physical activity. The factors that influence these disparities are described below; however, researchers note that the elderly, women, and those from minority groups such as migrant or low socio-economic populations are the least likely to participate in sufficient physical activity (Macera and Ainsworth, 2012; Australian Bureau of Statistics, 2012).

It is well recognised that a number of interrelated factors affect whether people live an active lifestyle or not (Figure 1 and Table 2). Knowledge of these influential factors concerning physical activity uptake is important to health policymakers to support the planning of effective public health interventions for the promotion of effective physical activity initiatives (Bauman et al., 2012). For example, are people more likely to participate in physical activity if they have specific skills or physical capabilities? Are people more likely to participate in physical activity if they have access to supportive environments like trails and footpaths? The ecological framework is described in more detail below as it considers the influences on
physical activity participation across five levels: intrapersonal, interpersonal, institutional or organisational, policy, and community or environmental (Table 2).

The decision for an individual to participate in physical activity can be influenced by a number of elements. These elements may work in isolation or together and potentially across the complete ecological framework, resulting in a culmination of their effects. To illustrate this, Everson and Semra (2012) provide an example “where a person who does not know how to swim lacks skills (intrapersonal), but this may have been influenced by having siblings who did not swim (interpersonal), living in a town without a public pool (community), or not having affordable swimming lessons (policy)”. All these factors ‘add up’ to create barriers to physical activity.
Figure 1. Ecological Model of Four Domains of Active Living (Sallis et al., 2008)
Table 2. Five aspects (or levels) of ecological framework, with definitions and examples. Adapted from table in Physical Activity and Public Health Practice, pg 322 (Macera and Ainsworth, 2012).

<table>
<thead>
<tr>
<th>Aspect (level)</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Intrapersonal (individual)</strong></td>
<td>Genetics, physiology, motivation, skills</td>
<td>Your genetic makeup, your ability to perform an activity (e.g., knowing how to swim), your intentions and motivations to make time for physical activity</td>
</tr>
<tr>
<td><strong>2. Interpersonal, social, cultural</strong></td>
<td>Social or cultural factors, which include formal and informal social networks and support systems including family and friends</td>
<td>Having friends to exercise with, living in a family that exercises together, living in a culture that supports physical activity for both men and women</td>
</tr>
<tr>
<td><strong>3. Institutional or organisational factors</strong></td>
<td>The social and physical environment of workplaces, schools, government institutions, hospitals, and other organisations</td>
<td>Having gym facilities available at work or at school</td>
</tr>
<tr>
<td><strong>4. Policy</strong></td>
<td>Laws, regulations, ordinances, formal and informal rules, and agreements that can be developed either by government or by the private sector (e.g. worksites, hospitals)</td>
<td>Having a job that gives you a free gym membership (workplace policy), living in a city that protects open space and parks (local government policy), living in a state that allocates a percentage of transportation funds to support infrastructure for walking and bicycling (state government policy)</td>
</tr>
<tr>
<td><strong>5. Community and environmental factors</strong></td>
<td>The social and physical environment of neighbourhoods and cities</td>
<td>Having footpaths in your neighbourhood, having cycle paths connecting your neighbourhood to your school, having safe and accessible parks and trails in your city/town</td>
</tr>
</tbody>
</table>

**Intrapersonal (Individual)**

Individual demographic characteristics such as age, gender and physiology influence one’s ability and interest in participating in physical activity, as does one’s economic status (Bauman et al., 2012). Older people are the least active of all population groups (Bauman et al., 2002), and the unfavourable relationship between physical activity and economic status is apparent as evidenced in research (Bauman et al., 2002). Self-efficacy also plays a role in
adult physical activity: if people are more confident that they can effectively complete a behaviour, they are more likely to participate (Parra-Medina and Zenong, 2012).

**Interpersonal**

Levels of support from families and friends and one’s social connections are considered to be influencing factors on physical activity participation (Bauman *et al*., 2012). Macera and Ainsworth (2012) discuss cultural and social norms and their influence on marginalised groups, such as immigrants’ physical activity levels. If being physically active is considered normal behaviour in one’s community, physical activity levels will in turn increase (Byrne *et al*., 2014). This suggests that physical activity interventions should incorporate strategies likely to modify behavioural social norms (Ball *et al*., 2010).

**Environment**

As depicted above, access to appropriate resources, facilities and supportive environments has been proven to influence physical activity levels (Macera and Ainsworth, 2012). Adults have higher levels of activity in urban compared to rural settings and even more so in well-connected communities (streets, footpaths, trails). Activity is greater particularly in communities that are aesthetically pleasing (Bauman *et al*., 2012) or that are deemed “walkable neighbourhoods” where houses are close to education institutes and commercial precincts with easy access for people to walk between two destinations (Sallis *et al*., 2008). Behaviour modelling is also noted as influencing participation levels; if one sees others being active, their behaviour may be positively influenced (Bauman *et al*., 2012). The natural environment such as topography, weather and vegetation will also influence participation levels throughout the life course (Bauman *et al*., 2012).
Regional/national

Differences across communities in our health sector, sports sector, advocacy, policy, urban planning and architecture, and even our transport systems will influence why some communities are more active than others (Bauman et al., 2012). Policies, for instance, can influence physical activity across settings from the school, workplace, state and country. Through effective policy, investments can be mandated for supportive infrastructure (trails, sports grounds) or regulations for building design (stairs, pavements), and these elements can all work towards positively influencing physical activity patterns (Bauman et al., 2012).

Global

At the highest level, global influences on physical activity participation include: global media, global product marketing, social and cultural norms and urbanisation (Bauman et al., 2012).

Tasmanian context

Tasmania has an ageing population, with high levels of low socio-economic disadvantage (Population Health, 2013) making it difficult to affect population-level change regarding physical activity participation, as those from disadvantaged populations are traditionally the hardest to engage and make long-term behaviour change (Bauman et al., 2002). In Tasmania, 69.4% report inadequate levels of physical activity participation and can also be said to be influenced by other unhealthy behaviours, such as smoking, over-nutrition and alcohol consumption, which in Tasmania are a contributor to the burden of disease (Population Health, 2013). Tasmania has some of the cleanest air in the world, and a vast array of open space, national parks and walking trails that are conducive to physical activity; however, many of these natural environments are not easily accessible for those who reside in urban centres. Tasmania has a cool climate with long winters, which is known to impact adversely
on physical activity participation (Lewis *et al.*, 2016; Tuckera and Gilliland, 2007).

Furthermore, Tasmania is impacted by poor town planning in the mid 20th century when marginalised communities (public-owned housing) were built on the urban fringe resulting in a lack of connectivity with schools, workplaces and shopping facilities. Public transport systems in Tasmania are also minimal, hindering access to physical activity opportunities.

In Tasmania, the state government developed the Premier’s Physical Activity Council in 2001.

“The Premier's Physical Activity Council (PPAC) was established in 2001 to address physical inactivity in Tasmania. Resourced through Communities, Sport and Recreation, Department of Premier and Cabinet, PPAC facilitates a coordinated, cross-sector and collaborative response to increasing and improving opportunities for physical activity in Tasmania. In 2010, PPAC led the development of [Tasmania’s plan for physical activity 2011-2021](https://www.tas.gov.au/health-and-well-being/healthy-living/physical-activity), which sets a unifying direction and framework for action to address physical inactivity in our state. In partnership with key stakeholders and the broader Tasmanian community, PPAC leads the implementation of the plan and is working towards achieving the vision that ‘all Tasmanians experience and enjoy the many benefits of regular physical activity’” (Tasmanian Department of Premier and Cabinet, 2016).

However, even with this focus from PPAC, preventative health care (inclusive of physical activity initiatives) is not being prioritised by the current state government. In 2016/17 the Tasmanian state budget is $5.5 billion. The health and human services budget is $1.4 billion. Preventative health is $28 million, representing only 0.2% of the overall health budget and 0.05% of the overall state budget (Tasmanian Treasury Office personal communication,
Without adequate funding, community groups and non-government organisations are left to develop physical activity interventions to meet community needs.

Active Launceston, the intervention on which this thesis is based, is scoped around the identified lack of coordination in the community for physical activities. It is evident that there are many other services for health and wellbeing e.g. Eat Well Tas, Quit Tasmania and Heart Foundation; however, there had not previously been an organised authority to promote the benefits of physical activity locally, or more importantly, to deliver a selection of inclusive physical activity opportunities to the Launceston community. Rather than duplicating or reinventing the wheel, Active Launceston initiatives were designed to add value to existing successful local programs, fill any identified gaps in provision, and develop capacity in the community to ensure sustainable participation in physical activity. Active Launceston is based on best practice research to increase population-level physical activity participation, and this best practice research is discussed in the section below.

**Best practice**

Best practice research suggests a community-wide multi-strategy approach is most effective to increase population-level physical activity; however, there is little evidence of successful projects in the peer reviewed literature due to the complexities of effectively measuring community-wide initiatives (Deakin University, 2012). In a recent systematic review, Baker and colleagues (2015) found no evidence that community-wide initiatives increase population-based physical activity levels. However, they concluded that this result may be due to serious methodological issues with studies rather than the success or failure of the intervention. The methodological issues included: selection bias, lack of control communities and lack of analysis against equity markers such as socio-economic status. Researchers suggest that rigorous evaluation with reliable outcome measures and comparison communities are required (Baker *et al*., 2015). Mittlemark and colleagues (1993) also
acknowledge the difficulties of measuring population-base outcomes of real-life health promotion programs, such as a lack of resources available for evaluation and measurement and confounding factors to behaviour change. In their survey of community-based projects for preventing obesity in Australia, Nichols et al. (2013) concluded that while these programs represent a large investment by both government and non-government sectors, they often go unrecognised due to lack of effective evaluation, and that this deficiency should be addressed to ensure their future contribution to public health knowledge and policy is acknowledged. Consequently, there is a need for improved research on the most effective ways of evaluating and measuring the impact of community-wide physical activity interventions (Macdonald et al., 1996).

*Elements of best practice for community-wide physical activity interventions*

This section will discuss the elements of best practice for increasing physical activity participation at the population level. Bauman, Finegood and Matsudo have argued that to facilitate community-wide increases in physical activity, three essential elements are required: supportive physical environments (e.g. trails, sports fields), mass media educational campaigns and community-wide interventions (Bauman et al., 2009). Furthermore, Sallis and colleagues (1998) discuss ecological models of health behaviour and suggest physical activity interventions should be developed for whole-of-populations, because working with individuals or small groups will not result in population-wide change. In a systematic review of initiatives that attempt to increase physical activity, Kahn et al. (2002) concluded that informational interventions such as community-wide education campaigns could be effective only if they are delivered along with behavioural change and supportive social interventions. However, Hillsdon and colleagues (2005) suggest that some short and mid-term participation increases can come from large interventions, although programs that also offer professional guidance and ongoing care will produce better outcomes. In summary, best practice suggests
there are a number of elements required to make population level change in physical activity participation: supportive environments, mass media and educational programs, community interventions, broad population engagement, professional guidance, and ongoing care.

When defining what a community-wide program looks like, Baker et al. (2015) describes community-wide interventions as aiming to improve the health risk factors of a whole population. They adopt the ecological model of health by investing in infrastructure and planning initiatives for sustainable community benefit. These include policy development, environmental changes, and can include elements such as mass media and individual activities.

In assessing the effectiveness of community-wide physical activity interventions, Baker and colleagues (2015) found 17,500 citations for whole-of-community interventions for increasing physical activity. After initial screening to meet eligibility criteria, only 25 were included for analysis; however, many citations were deemed not to meet best practice as they had insufficient strategies to achieve a whole-of-community approach. Best practice is defined by the eligibility criteria, which included types of studies (study design) and “two broad strategies aimed at physical activity for the whole population” (Baker et al., 2015). Cavill and Foster, in Baker et al. (2015) give examples of the types of strategies that would be consistent with an integrated community-wide intervention:

“1. Social marketing through local mass media (television, radio, newspaper).

2. Other communication strategies (posters, flyers, information booklets, web sites, maps) to raise awareness of the project and provide specific information to individuals in the community.”
3. Individual counselling by health professionals (both publicly and privately funded), such as the use of physical activity prescriptions.

4. Working with voluntary, government, and non-government organisations, including sporting clubs, to encourage participation in walking, other activities, and events.

5. Working within specific settings such as schools, workplaces, aged care centres, community centres, homeless shelters, and shopping malls. This may include settings that provide an opportunity to reach disadvantaged persons.

6. Environmental change strategies such as creation of walking trails and infrastructure with legislative, fiscal, policy requirements and planning (having ecological validity) for the broader population” (Cavill and Foster, in Baker et al., 2015).

These elements are now described in further detail below.

Social marketing

The term social marketing is commonly attributed to Kotler and Zaltman (1971) (Storey et al., 2008). Kotler and associates define social marketing as “a social influence technology involving the design, implementation and control of programs aimed at increasing the acceptability of a social idea or practice in one or more groups of target adopters” (Kotler and Roberto, 1989). As the concept has developed over time, a more recent outline of social marketing is provided by Andreasen: “Social marketing is the application of commercial marketing technologies to the analysis, planning, execution and evaluation of programs designed to influence the voluntary behaviour of target audiences in order to improve their personal welfare and that of their society” (Andreasen, 1994). Storey et al. (2008) validate this definition as it highlights a number of important elements, such as the use of marketing
to change behaviour for social and individual good. Commercial and social marketing become different when the key outcome of the marketing effort is to improve personal and social welfare rather than for economic gain.

Social marketing is a strategy widely adopted by health promotion professionals and plays an important part in most health behaviour change programs (Storey et al., 2008; Bull et al., 2004). In Australia, the ‘Get Moving Campaign’ was evaluated in 2007 and the report authors concluded that the campaign was successful by using ‘cut through’ communication methods (Walker and Elliot, 2007). ‘Cut through’ communication methods included in this campaign were primarily television commercials to encourage children and young people to do more physical activity and limit their screen time. Although behaviour change results for reducing screen time were not significant from the initial baseline survey, pre-campaign survey, and a follow-up survey, progress was made in the right direction (Walker and Elliot, 2007).

However, survey results did indicate that the Get Moving Campaign had helped community respondents to act or think differently, thus raising awareness of the importance of physical activity for health. Evaluators suggested that this provides a “good platform for future initiatives aimed at behaviour change” (Walker and Elliot, 2007).

**Communication strategies**

There are numerous mediated communication strategies that can be used to promote physical activity and health: internet, phone, print materials, mass media; and there have been a number of studies on the effectiveness of these strategies. Marshall and Owen (2004) discuss whether these strategies in isolation are less likely to be effective than using two or more mediated strategies, which would result in the best outcomes. In Australia, the impact of the 2008 ‘Measure up’ campaign was assessed (King et al., 2013). Multiple communication strategies were used including: television commercials, radio, print, public place and
community event advertising. The campaign aimed to reduce lifestyle risk factors for chronic disease including physical inactivity. Cross-sectional telephone surveys demonstrated that the ‘Measure Up’ campaign achieved high awareness of the issue of the health burden due to physical inactivity, but there were no changes reported in lifestyle behaviour including physical activity participation. Consequently, an integrated multi-faceted approach was recommended to make population-level behaviour change (King et al., 2013).

**Individual counselling**

Individual counselling has been found to be effective in increasing levels of physical activity (Dorn and Hoebbel, 2012). Individuals are encouraged to engage in goal setting processes to effect behaviour change and monitor their progress over time. This behaviour change process is often aided by counsellors, allied health professionals and ‘Health Coaches’ who can set individualised actions plans and provide resources to assist the individuals, such as website links, equipment and other tools and resources (Dorn and Hoebbel, 2012). Exercise physiologists, for example, have been deemed an ‘invaluable resource’ for the support they can provide to overcome risk factors to chronic disease (Franklin et al., 2009). Exercise physiologists are specialised exercise professionals who play a critical role in modifying levels of physical activity participation across a number of settings including clinics, hospitals and in the community (Franklin et al., 2009).

**Working with voluntary, government, and non-government organisations**

Parra-Medina (2012) suggests that mobilising local organisations (such as volunteer groups, government and non-government organisations) can help secure community resources to develop community trust, infrastructure and new initiatives. With financial resources becoming scarcer due to the fragile global economic climate, these types of partnerships are seen to be essential (O'Reilly and Brunette, 2013). Partnerships with a variety of
organisations are also cited as an effective way to achieve outcomes (Kickbusch and Quick, 1998; Jones and Barry, 2011a). Effective partnerships allow for broad ownership of health-related issues across societies and across sectors (other than health) ensuring all in the community take a reasonable approach to positively influence health outcomes (Kickbusch and Quick, 1998).

**Working within specific settings**

The benefits of working within different settings is primarily twofold; health promotion practitioners have an opportunity to reach a captive audience, including those who are traditionally harder to engage, and they have the ability to leverage off existing resources, infrastructure and leaders of each setting, making implementing programs easier and providing timely outcomes (Dorn and Hoebbel, 2012). The home, school, workplace, primary health setting and community are recognised as specific settings to promote the benefits of physical activity. For example, schools are important as they can engage the whole population from ages 5 to 17 years plus the wider school community of teachers and families (Stanton and Ford, 2012). Primary health care settings have a broad reach across whole populations and there is also a perceived influential factor from positions in the sector like General Practitioners (Bull et al., 2004).

**Environmental change strategies**

Our environment has both social and physical components as discussed in the ecological framework (Figure 1). This section will discuss the physical components of the environment. The physical environment includes air quality, pollution and traffic congestion. The built environment encompasses all constructed features such as buildings, roads and parks; and the natural environment includes naturally occurring features such as climate, vegetation and rivers (Hooper et al., 2012). There are numerous studies that provide evidence of the
influential factors of our physical environment on levels of physical activity participation (Sallis et al., 1998), and in Tasmania these challenges particularly relate to the climate and accessibility of venues as articulated above (Tasmanian context).

Social marketing, communication strategies, individual counselling, working with voluntary, government and non-government organisations, working with specific settings and adopting environmental change strategies all form part of a multi-strategy approach to increasing community levels of physical activity. The next section of this thesis will present the results of projects that have adopted some of these strategies in their attempts to increase population-level physical activity.

**Case studies: Community-wide physical activity projects**

In this section, four pioneering, globally recognised projects are highlighted to illustrate community-wide physical activity projects in the literature. These four studies, all developed in partnership with local universities, met the eligibility criteria as identified by Cavill and Foster (2015) in Baker’s Cochrane review (Baker et al., 2015). These studies are described below, including a presentation of the specific study characteristics in Table 3-6; they are the Pawtucket Heart Health Program, Stanford Five City Project, Minnesota Heart Health Program, Dutch Heart Health Program, and one Australian project is also considered: the 10,000 Steps Rockhampton Project (Table 7).

A community-wide education project seeking to change cardiovascular risk factors was assessed in Pawtucket (Carleton et al., 1995). As articulated in Table 3, the characteristics of the study included multiple strategies: education, screening and counselling programs. The study design was a controlled before and after study with independent samples. The sampling frame for the study was the whole community. The age ranges included 18-64 year olds and there was a comparison community with a comparable population. Carleton et al. (1995)
report the number of survey respondents (n=15,261) and the total number of individuals (n=42,000) making 110,000 contacts with the program (defined as any interaction with a program designed to influence behaviour). With the use of a comparison community, the Pawtucket Heart Health program did not record a decrease in physical inactivity in the intervention community (Eaton et al., 1999) but cardiovascular data demonstrated that disease rates were significantly (16%) less in Pawtucket during the intervention. However, this difference in disease rates between communities was reduced post the intervention (Carleton et al., 1995). Due to these outcomes, researchers concluded that for prolonged changes to occur, reinforcements were required from all levels of government including policy and program implementations (Carleton et al., 1995). It should also be noted that this project primarily engaged with middle-aged women and did not adopt an optimal whole-of community approach as outlined by Cavill and Foster (Baker et al., 2015), including engaging a wide range of individuals such as men, older adults and ethnic minorities (Eaton et al., 1999) and it only targeted one health condition, cardiovascular disease.
### Table 3. Characteristics of Pawtucket Heart Health Project (Baker et al., 2015)

| Methods | **Study Design:** Controlled before and after study (independent samples)  
|         | **Sampling Frame:** Whole community  
|         | **Collection Method:** Examination  
|         | **Ethics and informed consent:** Unclear |
| Participants | **Communities:** City  
|         | **Country:** USA  
|         | **Ages included in the assessment:** 18-64  
|         | **Reason provided for the intervention community:** Unclear  
|         | **Intervention community:** City of Pawtucket (population 7529)  
|         | **Comparison community:** Name withheld (population 7732) |
| Intervention | **Name of intervention:** Pawtucket Heart Health Program  
|         | **Theory:** Social Learning Theory  
|         | **Aim:** To reduce cardiovascular risk factors  
|         | **Description of costs and resources:** None provided  
|         | **Components of the intervention as per the inclusion criteria:**  
|         | #2 other communication strategies – self-help materials,  
|         | #4 Partnering community organisations,  
|         | #5 specific settings – 27 public and private schools,  
|         | #6 Environmental change – fitness trails, lighted walking tracks  
|         | **Emphasis of the intervention:** Chronic disease risk factor reduction  
|         | **Information given on intensity:** Described as ‘intensive’  
|         | **Start Date:** 1982  
|         | **Duration:** 7 years |
| Outcomes | **Outcomes, Measures and Results:**  
|         | 1. Sedentary (%) Measurement: Unnamed questionnaire  
|         | 2. Knowledge that physical activity prevents CVD (%) Measurement:  
|         | Unnamed questionnaire  
|         | 3. Attempted to increase physical activity (%). Measurement tool: Unnamed Questionnaire.  
|         | **Results:** Cardiovascular data demonstrated that disease rates were significantly (16%) less in Pawtucket during the intervention. |

The Stanford Five City Project used education in an attempt to reduce the risk of cardiovascular disease (Table 4). It focused on community organisation and community education programs for people aged 12-74 years. Like the Pawtucket study, it had a singular focus: to impact risk factors for heart disease (Winkleby et al., 1996). This study reported mixed outcomes with modest net differences in risk factors resulting in researchers suggesting the need for new interventions to accelerate changes in risk factor behaviour (Winkleby, et al., 1996). Fortmann et al. (1995) make recommendations for future
community intervention studies based on the results of the Stanford Five City Project. They suggest any future studies should focus on community-level behaviour change programs.

Fortmann discusses ‘generalizability’ and ensuring that interventions are applicable to real life not just to the clinical setting. ‘Diffusion of information’ is the second lesson learnt from the Five City project, recognising the need to integrate program information throughout populations and communication channels to acknowledge the differentiating communication habits of populations enabling synergistic effects on the consumption of health-related information (Fortmann, et al., 1995). Fortmann et al. discuss the ‘strength of the independent variable’ and the need for the duration of interventions to be expanded. They noted that the total exposure of one of the Stanford education programs was only five hours per year, in comparison to the 292 hours per year average time an American adult watches advertisements, which may have provided competing messages (Fortmann et al., 1995). This also helps to validate the final lesson learnt from Stanford project, which is the effect of secular trends. Results of both control and intervention communities can be eroded by general changes and long-term trends in society, as was seen with smoking rates in the Stanford project as they decreased across both the control and intervention communities from influences outside the controls of the intervention (Fortmann et al., 1995). Finally, Fortmann et al. highlight the importance of detailed process evaluation in measuring population-level change compared to expensive outcome evaluation to allow for a more detailed analysis of community change processes. Knowledge in this area is currently limited, but change processes appear to have a notable impact on the behaviour of individuals (Fortmann et al., 1995). Had this study included additional elements in line with best practice, such as working within specific settings to achieve generalizable outcomes, or if they were to enable environmental change through long-term interventions, or if they included detailed process evaluation in their study design, it is likely that the project would have been able to
demonstrate and report longer term behavioural change. This is, however, speculative and would need to be validated by future research.

Table 4. Characteristics of Stanford Five City Project (Baker et al., 2015)

<table>
<thead>
<tr>
<th>Methods</th>
<th>Study Design: Controlled before and after study (cohort and independent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sampling Frame: No detail</td>
</tr>
<tr>
<td></td>
<td>Collection Method: Survey</td>
</tr>
<tr>
<td></td>
<td>Ethics and informed consent: No detail</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participants</th>
<th>Communities: Cities of California, USA-California, four cities: two intervention and two control (a fifth city, Santa Aria had only cardiovascular morbidity and mortality surveillance)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Country: United states</td>
</tr>
<tr>
<td></td>
<td>Ages included in the assessment: 12-74 years</td>
</tr>
<tr>
<td></td>
<td>Reason provided for the intervention community: Limited resources and overlap of media markets</td>
</tr>
<tr>
<td></td>
<td>Intervention community: Monterey and Salinas</td>
</tr>
<tr>
<td></td>
<td>Comparison community: Modesto and San Luis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Name of intervention: Stanford Five City Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory: Not explicitly stated</td>
</tr>
<tr>
<td></td>
<td>Aim: Risk reduction education program</td>
</tr>
<tr>
<td></td>
<td>Description of costs and resources: None described</td>
</tr>
<tr>
<td></td>
<td>Components of the intervention as per the inclusion criteria: #1 Social marketing – mass media print materials, newspaper column, evening news; #4 Partnering – talks seminars by health. Described as an integrated community wide multifactorial risk factor education program</td>
</tr>
<tr>
<td></td>
<td>Emphasis of the intervention: Unclear</td>
</tr>
<tr>
<td></td>
<td>Information given on intensity: Described as “relatively weak intervention effort”</td>
</tr>
<tr>
<td></td>
<td>Start Date: 1980</td>
</tr>
<tr>
<td></td>
<td>Duration: 5 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Outcomes, Measures and Results:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. % in vigorous activities. Measurement tool: Questionnaire</td>
</tr>
<tr>
<td></td>
<td>2. Sum of usual activities (Maximum value #5): Questionnaire</td>
</tr>
<tr>
<td></td>
<td>3. Daily expenditure (kcal kg1 day) Measurement tool: Stanford 7-day physical activity recall</td>
</tr>
<tr>
<td></td>
<td>4. Exercise knowledge. Measurement tool: Questionnaire (5 questions)</td>
</tr>
<tr>
<td></td>
<td>Time points: Baseline (11) and 3 other independent surveys (12-4) and 3 other cohort surveys (C2-C4) which cover the first 6 years of the project. Surveys were conducted every 2 years.</td>
</tr>
<tr>
<td></td>
<td>Results: This study reported mixed outcomes with modest net differences in risk factors.</td>
</tr>
</tbody>
</table>

The Minnesota Heart Health Program (MHHP) was a 13-year-long multi-component education program in six communities aimed to reduce risk factors for cardiovascular disease.
It used educational initiatives, targeting weight control, exercise and cholesterol reduction, across multiple settings: home, workplace and the community (Table 5). However, the MHHP failed to reduce the prevalence of obesity and other risk factors in the intervention communities (Jeffery, 1995). Jeffery provides a number of limitations of this study and rationales for MHHP’s failings. Similar to the conclusions of Fortmann et al. (1995) on the Stanford Five City Project regarding secular trends, Jeffery (1995) poses the possibility that secular trends and changing social conditions simply outweighed the weaker effects of the MHHP intervention. Societal conditions were changing at the time of the MHHP and factors outside the control of researchers caused an increase in obesity levels. This may have been due to changes in marketplace of food or exercise options, for example, but these changes were substantially more powerful, such that their effects could not be offset by the intervention. Jeffery (1995) suggests an alternative reason for the less than desirable outcomes is that MHHP programs did not engage enough people. Weight control initiatives were not well maintained and only had limited effectiveness for the individuals involved; however, if a large number of people had been engaged in the MHHP weight loss interventions, a more positive result might have been achieved. Furthermore, with a lack of process evaluation, including community participation numbers, Jeffery concludes that the MHHP interventions engaged too few people and thus the impact on the community as a whole could not be measured (1995).

Jeffery (1995) discusses a third possibility for the outcomes of the MHHP to be the saturated marketplace and the understanding that a large percentage of the population already try to lose weight on a regular basis. Jeffery questions if the intervention was being delivered in competition with other weight loss providers, thus only shifting those who were ready to make a change in behaviour from one provider to another, rather than changing the overall demand for ways to control weight. This was evidenced in a workplace initiative of the
MHHP that used a control site. After a two-year intervention with multiple strategies, the BMI between the intervention and control sites did not differ (Jeffery, 1995).

A fourth reason for the outcomes is that the MHHP delivered too many interventions at one time (i.e. physical activity, smoking cessation, cholesterol reduction). Any single goal may not have been achieved due to the distraction provided by simultaneous messages about multiple behaviour change processes. Changing multiple behaviours is used widely to affect health improvement but the impact it has on behaviours such as physical activity and smoking cessation like in the MHHP are not conclusive (Nigg et al., 2012). Clinical research and a 2010 meta-review has suggested that single health behaviour change interventions (e.g. increase physical activity) are more effective than simultaneous multiple health behaviour attempts (e.g. physical activity and weight reduction) (Jeffery, 1995; Sweet and Fortier 2010; Prochaska and Prochaska 2011). Finally, Jeffery suggests that a possible factor for the failure of the educational components of the MHHP was that the notion of affecting body weight via education is inherently weak. MHHP was formed on the belief that educating people about the risks associated with weight gain will inspire them to change. In summary, Jeffery suggests the limitations of the MHHP were changing social conditions, too few people were engaged, the weight loss market was already saturated, too many interventions were made at one time and, finally, that using education programs alone is not an effective approach to change behaviour (Jeffery, 1995). As per Fortmann and colleagues’ commentary on the Stanford Five Cities project (Fortmann et al., 1995), the MHHP also lacked detailed process and qualitative evaluation, limiting the possible impact and outcome measures at a community level.
**Table 5. Characteristics of Minnesota Heart Health Program** *(Baker et al., 2015)*

<table>
<thead>
<tr>
<th>Methods</th>
<th>Study Design: Controlled before and after study (Cohort follow-up and independent samples)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Sampling Frame:</strong> Census blocks</td>
</tr>
<tr>
<td></td>
<td><strong>Collection Method:</strong> In person measurement</td>
</tr>
<tr>
<td></td>
<td><strong>Ethics and informed consent:</strong> No details of informed consent or ethical approvals</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participants</th>
<th>Communities: Towns in the upper mid-west, Minnesota</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Country:</strong> USA</td>
</tr>
<tr>
<td></td>
<td><strong>Ages included in the assessment:</strong> 25-74</td>
</tr>
<tr>
<td></td>
<td><strong>Reason provided for the intervention community:</strong> Unclear</td>
</tr>
<tr>
<td></td>
<td><strong>Intervention community:</strong> The towns of Mankato (population 37,812), Fargo-Moorhead (population 111,579) and Bloomington (population 81,831)</td>
</tr>
<tr>
<td></td>
<td><strong>Comparison community:</strong> The towns of Winona (population 25,075), Sioux Falls (81,831) and Roserville (population 74,731). These towns were matched for size of community, type of community and distance from the twin cities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention</th>
<th><strong>Name of intervention:</strong> Minnesota Heart Health Program</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Theory:</strong> Social Learning Theory: Persuasive Communication Theory and models for involvement of community leaders and institutions.</td>
</tr>
<tr>
<td></td>
<td><strong>Aim:</strong> Cardiovascular disease prevention</td>
</tr>
<tr>
<td></td>
<td><strong>Description of costs and resources:</strong> Unclear</td>
</tr>
<tr>
<td></td>
<td><strong>Components of the intervention as per the inclusion criteria:</strong> #1 Social Marketing – through mass media; #2 Other communication strategies; #3 Individual counselling; #4 Partnering – working with sporting clubs etc; #5 Specific settings – in workplace; 6) Environmental change</td>
</tr>
<tr>
<td></td>
<td><strong>Emphasis of the intervention:</strong> Multi-level high intensity media campaigns</td>
</tr>
<tr>
<td></td>
<td><strong>Information given on intensity:</strong> Described as high intensity</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date:</strong> Baseline measurement for 16 months. Intervention commenced 1981</td>
</tr>
<tr>
<td></td>
<td><strong>Duration:</strong> 5-6 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcomes</th>
<th><strong>Outcomes, Measures and Results:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Leisure time physical activity (%). Unnamed questionnaire</td>
</tr>
<tr>
<td></td>
<td>2. Physical activity score kcal/day. Home interview.</td>
</tr>
<tr>
<td></td>
<td><strong>Time points:</strong> Baseline (for 3 years) and post intervention (years 1, 3, 5, 6 (pooled comparison))</td>
</tr>
<tr>
<td></td>
<td><strong>Results:</strong> This study failed to reduce the prevalence of obesity and other risk factors in the intervention communities.</td>
</tr>
</tbody>
</table>

The Dutch Heart Health (DHH) community intervention attempted to reduce cardio-vascular disease using community organisation principles and health education methods and theories *(Ronda et al., 2004)*. The intervention worked across organisations including: general practice, sports clubs, the public health institute, social work organisations and companies in
the province of Limburg (Table 6). During a two-year intervention period, the 180,000 residents of the region were encouraged by the researchers to change their behaviours regarding fat intake, physical activity participation and the cessation of smoking. Although 293 activities were registered as part of the project, researchers only report on the number of respondents to the survey (n=1429) rather than participants in the activities themselves.

Ronda and colleagues (2004) found the DHH demonstrated few significant effects during the intervention period; however, there was a slight reduction in the intake of fat, providing promising results. The study lists numerous limitations such as lack of baseline measurements, low participation numbers, and low response and retention rates to surveys resulting in a questioning of the validity of the sample (Ronda et al., 2004). Similar to the Stanford Five City Project, the DHH used a multi-strategy approach although focused on one disease only. The research also suffered from similar methodological issues raised in the other case studies presented, resulting in a number of limitations for the study, such as not reaching a large proportion of the population to show a measurable change (Ronda et al., 2004).
Table 6. Characteristics of Hartslag Limburg (Baker et al., 2015)

<table>
<thead>
<tr>
<th>Methods</th>
<th>Study Design: Controlled before and after study (independent samples and cohort follow-up)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sampling Frame: Population registries</td>
</tr>
<tr>
<td></td>
<td>Collection Method: Questionnaire and physical examination</td>
</tr>
<tr>
<td></td>
<td>Ethics and informed consent: Dutch medical ethics committee TNO provided approval. All participants gave informed consent.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participants</th>
<th>Communities: Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Country: Netherlands</td>
</tr>
<tr>
<td></td>
<td>Ages included in the assessment: 14 years and older</td>
</tr>
<tr>
<td></td>
<td>Reason provided for the intervention community: Unclear, seems likely related to study centre location</td>
</tr>
<tr>
<td></td>
<td>Intervention community: Maastricht (population 185 000)</td>
</tr>
<tr>
<td></td>
<td>Comparison community: Doestiche (population comparable to Maastricht)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Name of intervention: Hartslag Limburg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory: Multi-stage conceptual framework</td>
</tr>
<tr>
<td></td>
<td>Aim: Improvement of lifestyle factors (energy intake, fat intake, time spent on leisure time physical activity (of walking, bicycling and sports), and smoking</td>
</tr>
<tr>
<td></td>
<td>Description of costs and resources: Total cost of the program was 809,650 Euro; of which 555,148 Euro was spent on exercise. Total cost of 5 year was 900,000 Euro, 86,000 Euro start-up costs.</td>
</tr>
<tr>
<td></td>
<td>Components of the intervention as per the inclusion criteria: #1 Social Marketing – mass media; #2 Other communication strategies – printed guides showing walking and cycling routes including schedule: #4 Partnering – working with organisations to encourage walking; #5 Specific settings – schools.</td>
</tr>
<tr>
<td></td>
<td>Emphasis of the intervention: Community intervention</td>
</tr>
<tr>
<td></td>
<td>Information given on intensity: High</td>
</tr>
<tr>
<td></td>
<td>Start Date: 1999</td>
</tr>
<tr>
<td></td>
<td>Duration: 4 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Outcomes, Measures and Results:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time points: Baseline and follow-up (2 years and 3 years)</td>
</tr>
<tr>
<td></td>
<td>Results: This study demonstrated few significant effects during the intervention period; however, there was a slight reduction in the intake of fat.</td>
</tr>
</tbody>
</table>

In Australia, the 10,000 Steps Rockhampton Project (Brown et al., 2003) was a multi-strategy physical activity intervention that resulted in significant reach and awareness of the initiative, and a moderate increase in participation among women (Table 7). The project was delivered
across multiple settings and multiple demographic profiles were engaged; however, a key limitation of the intervention was that 10,000 Steps Rockhampton only focused one activity in their attempt to increase physical activity: walking. If walking was not a motivating or achievable (those with a disability) activity, community members would have been excluded from this intervention, limiting the population-level effects. Brown et al. (2006) suggest that the walking intervention focused on three strategies to effect behaviour change; marketing strategies, promotion of physical activity by health professionals and environmental support for physical activity, notably community programs to motivate participation, are excluded in this study design. Making changes to population-level physical activity is difficult (Merzel and D’Afflitti, 2003). The 10,000 Steps Rockhampton results support the notion that using one type of activity alone is not enough to cause prolonged culture changes in lifestyle-related behaviour (Mittelmark et al., 1993). Had this intervention included a variety of activities, community programs and further evaluation of processes via collecting qualitative data, it is possible that its population impact might have been greater (Jeffery, 1995; Fortmann et al., 1995).
Table 7. Characteristics of 10,000 Steps Rockhampton (Baker et al., 2015)

<table>
<thead>
<tr>
<th>Methods</th>
<th>Study Design:</th>
<th>Controlled before and after study (independent samples)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sampling Frame:</td>
<td>Electronic database of telephone numbers</td>
</tr>
<tr>
<td></td>
<td>Collection Method:</td>
<td>Random</td>
</tr>
<tr>
<td></td>
<td>Ethics and informed consent:</td>
<td>Ethics approved, informed consent limited to the participation in the survey.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participants</th>
<th>Communities:</th>
<th>Regional cities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Country:</td>
<td>Australia</td>
</tr>
<tr>
<td></td>
<td>Ages included in the assessment:</td>
<td>18-60</td>
</tr>
<tr>
<td></td>
<td>Reason provided for the intervention community:</td>
<td>None stated. Presumably location of the study centre and pre-existing partnerships</td>
</tr>
<tr>
<td></td>
<td>Intervention community:</td>
<td>City of Rockhampton (60 000)</td>
</tr>
<tr>
<td></td>
<td>Comparison community:</td>
<td>City of Mackay (75 000)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Name of intervention:</th>
<th>10 000 Steps Rockhampton</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory:</td>
<td>Social ecological framework</td>
</tr>
<tr>
<td></td>
<td>Aim:</td>
<td>Evaluation of a whole community approach to improving levels of physical activity</td>
</tr>
<tr>
<td></td>
<td>Description of costs and resources:</td>
<td>See below</td>
</tr>
<tr>
<td></td>
<td>Components of the intervention as per the inclusion criteria:</td>
<td>#1 Social marketing – media campaign; #2 Other communication strategies – including pedometers and logbooks, website advertising, local pharmacies, libraries, poster dog walking; #3 Individual counselling – promotion by health professionals (21 of 23 GP Practices); #4 Partnering – specific settings, local activity task force with community organisations, government sport and recreation, business and media organisations; #5 Specific Settings – workplaces and shopping malls; #6 Environmental change – Working with the city council to improve local environment, creating, repairing key footpaths, “10 000 Steps” signage and maps.</td>
</tr>
<tr>
<td></td>
<td>Emphasis of the intervention:</td>
<td>Promotion physical activity</td>
</tr>
<tr>
<td></td>
<td>Information given on intensity:</td>
<td>Grant scheme of $100 000 plus in-kind support. $20 000 spent on paid advertising and event marketing, $50 000 provided through in-kind marketing contributions.</td>
</tr>
<tr>
<td></td>
<td>Start Date:</td>
<td>August 2001</td>
</tr>
<tr>
<td></td>
<td>Duration:</td>
<td>18 months</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Outcomes, Measures and Results:</th>
<th>1. Active (%). Measurement tool: Active Australia questionnaire.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Results:</td>
<td>This study resulted in significant reach and awareness of the initiative, and a moderate increase in participation among women.</td>
</tr>
</tbody>
</table>

The case studies above illustrate that positive results can be gained from community-wide projects, but these types of projects are difficult to implement and may not be successful (at a population level) if they are not multi-strategy. An element that all the case studies described...
above do have in common, however, is they are all initiated through a university engaging with its community.

**University community engagement**
The first western university was established in Bologna, Italy in 1088. Since this time universities internationally have accepted a role in serving society by maintaining an independent responsibility for knowledge. This is articulated in the Magna Charta Universitatum (Magna Charta Universitatum, 1988).

This charter suggests that the vocation of a university as an autonomous institution is primarily teaching, research and the configuration of its resources. It is to inform and shape fairness, justice and a forward-looking society. Since this time universities have changed from being the creators of knowledge and generators of an educated workforce to institutions that are more engaged in their community, nurturing cultural and socio-economic vitality. This is now important, as community engagement is seen to embody the brand for a university and demonstrates its value to local, national and international industries and communities (Bartkowiak-Theron and Anderson, 2014). Jones and Wells (2007) define community engagement as:

“Community engagement refers to values, strategies, and actions that support authentic partnerships, including mutual respect and active, inclusive participation; power sharing and equity; mutual benefit or finding the “win-win” possibility; and flexibility in pursuing goals, methods, and time frames to fit the priorities, needs, and capacities of communities.” (Jones and Wells, 2007)

Common to many definitions is the notion that community engagement is the process of working collaboratively with, and through, groups of people connected through physical or non-physical mediums, or special interest groups, to address issues affecting their wellbeing.
It often involves partnerships and coalitions that help to mobilise resources and influence systems, change relationships, and serve as catalysts for changing behaviours, practices, and policies (Fawcett et al. 1995).

Beyond the collective definition of community engagement is the notion of university–community engagement which by extension is defined as the creation of sustainable partnerships between a university and its surrounding communities that enhance the learning experience of students and staff while simultaneously contributing to the overall health and wellbeing of the local community (Fairnie and Platt, 2004).

The focus of this thesis, Active Launceston, is an example of university–community engagement as it achieved a number of the key concepts that underpin effective community engagement, including the concepts of reciprocity, mutual benefit, knowledge application, and capacity building.

**The five pillars**

In summary, this literature review has illustrated the many factors that contribute to participation in physical activity and, subsequently, the complexities of best practice guidelines for improving physical activity participation, which evidently have proven difficult to implement. Consequently, interventions to increase population physical activity levels have produced equivocal results, and many of these discrepancies may be attributed to research methods (not encompassing all aspects of best practice), limiting measures of success and limiting target populations. Clearly there is a need for more population-wide interventions that foster best practice recommendations when engaging with the community and that analyse program success via multiple methods to ensure all elements of success are captured.
There are many factors that influence why some people are active and others are not (facilitators and barriers). Understanding these factors and designing community-wide multi-strategy initiatives to engage a broad demographic of people in more physical activity to enable them to reap the many benefits of participation are vital. Effectively measuring the outcomes, which has proven to be a constant challenge for health promotion practitioners and researchers alike, is also important. This review of literature and best practice interventions led to the development of the ‘five pillars’ (Figure 2) to guide the Active Launceston program implementation. The pillars – supportive environments, mass media, community initiatives, professional support, multifaceted evaluation – are all elements that researchers suggest are essential for achieving population-level changes in physical activity. The methods section of this thesis will present how our research, through effective university–community engagement, addressed all ‘five pillars’. The combination of outputs against these key ‘five pillars’ provided the rationale behind our hypothesis: that a community-wide, multi-strategy intervention can increase physical activity participation in the Launceston community in addition to increasing levels of social engagement.
Figure 2. Active Launceston outputs against five pillars identified by researchers as the key to successfully changing population-level physical activity rates.

**Research question**

**Primary question**
Can a community-wide, multi-strategy intervention increase physical activity participation in the Launceston community?

**Secondary questions**
Process evaluation secondary questions:

1. Did Active Launceston reach a broad demographic across age ranges and economic backgrounds?
2. What were the perceived personal benefits to participants?
3. What were the perceived facilitators of participation?
4. What were the perceived barriers to participation?
Impact evaluation secondary questions:

1. Did participation in physical activity increase between the time points and were there changes to the regularity of this participation?
2. Were there any changes in the intensity of physical activity participation?
3. Were there any changes to the number of people participating in sufficient physical activity for health?
4. Did the nature of physical activity participation (unstructured, structured) change?
5. Did the awareness of Active Launceston improve throughout the duration of the program?

Hypotheses

A community-wide, multi-strategy intervention will increase physical activity participation in the Launceston community.

Process evaluation hypotheses:

1. Active Launceston will reach a broad demographic across age ranges and economic backgrounds.
2. There will be multiple perceived personal benefits to participants including increase in participation, social benefits and enjoyment.
3. There will be multiple perceived facilitators of participation including the no-cost nature of programs, sense of belonging, social engagement, and suitable instructors.
4. There will be multiple perceived barriers to participation such as lack of variety and the appropriate scheduling of sessions.
Impact evaluation hypotheses:

1. Participation in physical activity will increase between the time points and the regularity of this participation will increase.

2. The intensity of physical activity participation will remain constant or increase over the time points.

3. The number of people participating in sufficient physical activity for health will increase.

4. The nature of physical activity participation will favour structured opportunities.

5. The awareness of Active Launceston will improve throughout the duration of the program.
Methods

Active Launceston

Active Launceston was launched in June 2008 through a partnership between the University of Tasmania (UTAS), Launceston City Council and the Tasmanian State Government. Intersectoral partnerships are fundamental to improving health (Kickbusch and Quick, 1998) and thus this partnership was established with the understanding that synergistic outcomes would be achieved by the collaboration at a higher rate than would be achieved by individual partners working alone (Jones and Barry, 2011b).

Active Launceston was underpinned by the Ottawa Charter for Health Promotion and primarily focused on the fifth action area of this charter: to reorient (health) services towards a prevention focus (WHO 2014a). The Active Launceston program adopted a community-engagement, population-based approach (Mittelmark et al., 1993) with a goal to mobilise community members to increase their voluntary participation in physical activity by: filling gaps in provision, reducing barriers, and targeting those with the highest need. Active Launceston was a community-wide, multi-strategy intervention aiming to increase physical activity participation in the regional community of Launceston, Tasmania, Australia over a period of eight years.

Figure 2 depicts the difference between our intervention and other community-wide physical activity interventions discussed earlier in this thesis. Active Launceston produced outputs against all ‘five pillars’ identified by the research cited in the literature review as the key elements to successfully changing population-level physical activity participation rates – elements recognised as best practice. These include:
Supportive environments

Active Launceston installed ‘point of decision’ signage in all multi-storey publicly owned buildings in Launceston encouraging people to take the stairs rather than the lift and also provided a free carpark on the fringe of the central business district with signage encouraging community members to park for free and walk to work. Active Launceston also advocated for environmental change through developing partnerships with key stakeholders and organisations and contributing to policy development and planning at a local government and state government level.

Mass media

Active Launceston was supported by an extensive marketing campaign utilising radio, print, television, web and social media. The focus of the media was to increase brand awareness, promote program partners, disseminate information about the benefits of a physically active lifestyle and most importantly to create awareness of new opportunities to be physically active. Active Launceston released 97 media advisories and received coverage through print media on 146 occasions, had 49 appearances on television editorial news programs and 64 radio interviews between 2008 and 2016. Print media included local newspapers, media bulletins, health promotion newsletters, council calendars and e-newsletters. Through an endorsement process, Active Launceston also supported and promoted other physical activity providers across the community to avoid duplication and resource waste.

Community initiatives

Active Launceston delivered a suite of free community-based physical activity programs and events. Programs were provided for specific age groups and economic backgrounds in addition to targeting community members from culturally and linguistically diverse backgrounds, youth at risk, those suffering from a chronic condition, those with a disability
and those recovering from illness or injury. The variety of activities and sessions included but were not limited to: dancing, swimming, hydrotherapy, archery, orienteering, yoga, tai chi, walking, running, bike riding, rock climbing, sailing and laser tag. The duration of each program was typically eight weeks. Sessions ranged from 40 minutes to 2 hours weekly or monthly.

**Professional support**

Active Launceston contracted industry professionals to coordinate and deliver programs (yoga instructors, personal trainers, exercise physiologists, dietitians, sports clubs).

**Research design**

This research adopts an interrupted time-series process and impact mixed-methods research design. The mixed-methods approach combines both qualitative and quantitative methods in the one study design and allows for the triangulation of data (Tariq and Woodman 2013).

Process evaluation was used to appraise the success of implementation and the extent of participation, and to identify the demographic groups that engaged in activities, as well as to identify how participants and stakeholders viewed the program. Impact evaluation was used to assess whether physical activity increased in the Launceston area during the period of Active Launceston.

This evaluation was approved by the University of Tasmania Human Research Ethics Committee (Social Science) Reference Nos. H0010054, H0013292, H0012334.

In summary, the study characteristics are listed in Table 8 below in a comparable format to the Baker Cochrane review (Baker *et al.*, 2015).
### Table 8. Active Launceston Study Characteristics

<table>
<thead>
<tr>
<th>Methods</th>
<th>Study Design: Interrupted time-series process and impact mixed-methods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sampling Frame: Telephone registry, program participants and stakeholders, general community</td>
</tr>
<tr>
<td></td>
<td>Collection Method: Computer assisted telephone interviewing, focus groups, stakeholder interviews, online survey</td>
</tr>
<tr>
<td></td>
<td>Ethics and informed consent: Ethics approved. Informed consent from all participants.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participants</th>
<th>Communities: A regional city</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Country: Australia</td>
</tr>
<tr>
<td></td>
<td>Ages included in the assessment: 15-87</td>
</tr>
<tr>
<td></td>
<td>Reason provided for the intervention community: Low levels of physical activity participation</td>
</tr>
<tr>
<td></td>
<td>Intervention community: Launceston (85,591)</td>
</tr>
<tr>
<td></td>
<td>Comparison community: None.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Name of intervention: Active Launceston</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory: Ottawa Health Promotion Charter</td>
</tr>
<tr>
<td></td>
<td>Aim: Increase physical activity</td>
</tr>
<tr>
<td></td>
<td>Description of costs and resources: $1.8 million received for salary and non-salary components from grants, sponsorships, donations and funding allocations from partner organisations.</td>
</tr>
<tr>
<td></td>
<td>Components of the intervention as per the inclusion criteria: #1 Social Marketing, #2 Other communication strategies, #Individual counselling, #4 Partnering, #5 Specific settings, #6 Environmental changes</td>
</tr>
<tr>
<td></td>
<td>Emphasis of the intervention: Multi-strategy to increase physical activity participation</td>
</tr>
<tr>
<td></td>
<td>Information given on intensity: Yes, moderate and vigorous</td>
</tr>
<tr>
<td></td>
<td>Start Date: June 2008</td>
</tr>
<tr>
<td></td>
<td>Duration: 8 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Outcomes and Measures: Demographic reach, benefits, barriers, enablers, level of physical activity, intensity of physical activity, nature of physical activity and awareness of initiative.</th>
</tr>
</thead>
</table>

**Process evaluation**

Process evaluation was measured using focus groups, stakeholder interviews, a serial online survey and the analysis of demographic data and participation statistics. Demographic information was collected from participants before the start of each physical activity program including: date of birth, residential postcode, and health care card status as a measure of...
disadvantage. The number of participants at each physical activity session was recorded by the fitness instructor delivering that session. Numbers of participants at Active Launceston major events were estimated by event managers who were present at each event. These events included free breakfasts annually for Ride to Work Day and Walk to Work Day in the central Launceston Mall.

In 2012, six focus groups of Active Launceston participants were conducted after the final session of six Active Launceston programs: ‘Growing Older Living Dangerously’ (for older people), ‘Active Bike’, ‘Active and Inclusive’ (for those with a disability), ‘Stretch and Strengthen’, ‘Gentle Exercise’ and ‘Active Kids’. In 2015, four focus groups of Active Launceston participants were conducted after the final session of three Active Launceston programs: Active Swim (for migrants and refugees), Active Sports, Active Bike and a final focus group was held in a lower socio-economic community with an open invite to the general public. Demographic information was not collected from focus group participants.

These focus groups were advertised via email, social media and the Active Launceston website. They were facilitated by a researcher who had no other involvement in the administration of the program. Focus-group interviews were semi-structured, with all discussions audio-recorded and transcribed verbatim. Questions related to involvement and participation in Active Launceston, how it influenced participants’ physical activity and other aspects of their lives, and what they saw as the strengths and challenges of the program.

In November 2012 and 2015, semi-structured interviews were conducted with key stakeholders who represented funding bodies, project partners, service providers and the community. The interviews were conducted via telephone or face-to-face. Questions related to stakeholders’ involvement with Active Launceston, the perceived benefits to individuals and the community, and perceived strengths and potential improvements.
Further process evaluation was carried out through a serial online survey (n=734), that was available to interested community members between 2009 and 2015 (University of Tasmania, 2008). No a priori determination of sample size was performed for the online survey. The survey was available on the Active Launceston website continuously and was also distributed to participants at the completion of each program. The survey included multiple choice, open-ended questions and Likert scale response questions to investigate participant demographics, perceptions of their own participation, and of the overall project.

An inductive thematic approach (Liamputtong and Ezzy, 2005; Hansen, 2006) was used to analyse qualitative data from participant focus groups, stakeholder interviews and the online survey. Identified themes were then organised according to the four overarching process evaluation questions:

1. Did Active Launceston reach a broad demographic across age ranges and economic backgrounds?
2. What were the perceived personal benefits to participants?
3. What are the perceived facilitators of participation?
4. What are the perceived barriers to participation?

The analysis was conducted using the NVivo 10 (QSR International) software program by an individual researcher.

**Impact evaluation**

Community-wide engagement in physical activity was measured using cross-sectional serial random telephone surveys of community members before the start of the program in 2008, after the program had been running for 4½ years in 2012 and a further 3 years in November 2015 in line with the end of funding cycles. These surveys were administered by an independent contracted researcher. Quota sampling was deployed to achieve minimum age
and gender quotas and, as such, interviewers requested the youngest person in the household to respond to the survey, noting that the survey tool was designed to be completed by respondents aged 15 years and over. Sample size was determined by assuming a population of 85,591 residing in Greater Launceston aged 15 years or over (Australian Bureau of Statistics, 2010), providing a maximum margin of error for the total sample of +/- 3.25% at the 95% confidence level. The survey was conducted using CATI (Computer Assisted Telephone Interviewing), a Survey System software. Survey respondents were selected using a randomised telephone-number generator.

The survey included questions regarding the type, amount, regularity and intensity of physical activity, allowing for the calculation of sufficient activity for health. Questions were adapted from validated tools including the Australian Exercise Recreation and Sport Survey, questions 1 and 3 (Australian Sports Commission, 2008) and the National Health Survey 2007-2008, EXER_Q1, 3, 6, 8, 11, 13 (Australian Bureau of Statistics, 2009). In addition, respondents were asked if they were aware of the Active Launceston initiative and if they had ever participated in any Active Launceston activities.

Sufficient activity for health was calculated by adding the time spent walking, participating in moderate activity and twice the time spent in vigorous activity over the last two weeks, divided by two (Australian Institute of Health and Welfare, 2003). The time spent doing vigorous activity is doubled because it is more intense and is considered to confer greater health benefits than moderate activity (Armstrong et al., 2000). The total activity time was divided by two to obtain a weekly average (collected per fortnight). Sufficient activity for health was classified as participation in at least 150 minutes of activity per week (Australian Institute of Health and Welfare, 2003). Participation in no activity was classified as inactive.
Results were entered into Microsoft Excel (Microsoft, Redmond, USA) spreadsheet and then imported into Stata 13 (StataCorp, College Station, Texas) for analysis. All data was analysed statistically with Poisson regression (Incidence Rate Ratio; 95% confidence interval), to assess the differences in physical activity participation between the different years. Post-estimation Holm test analysis was used to adjust p values for multiple comparisons. GraphPad Prism (Version 6, San Diego CA) was used to plot the raw data.

Impact evaluation aimed to address the following overarching questions:

1. Did participation in physical activity increase between the time points and were there changes to the regularity of this participation?
2. Were there any changes in the intensity of physical activity participation?
3. Were there any changes to the number of people participating in sufficient physical activity for health?
4. Did the nature of physical activity participation (unstructured, structured) change?
5. Did the awareness of Active Launceston improve throughout the duration of the program?
**Results**

**Process evaluation**

Between mid-2008 and the end of 2015, Active Launceston coordinated 190 community programs that attracted 11,887 attendees who attended 30,342 sessions, amounting to approximately 38,088 hours of physical activity. Typically, 1,000 new individuals joined Active Launceston annually.

In 2012, forty-one community members attended six participant focus groups, 13 stakeholders were interviewed, and the online survey received 545 responses. In 2015, thirty-three community members attended four focus groups, 10 stakeholders were interviewed and the online survey received 189 responses.

**Demographic characteristics from enrolment data**

Demographic information was provided at enrolment by 6,077 Active Launceston participants. The difference in the number of participants whose demographic data was collected compared with the total participation rate (n=11,887) is due to data collection limitations including: incomplete forms, repeat participation, and demographic data unable to be collected at major events. Active Launceston initiatives engaged community members ranging in age from 1 to 87 years. Over one-third of participants (35.1%) were aged under 15, while 14.5% were aged over 55. Two-thirds of participants were female (65.8%), and over one-third (37.7%) were health care card holders. 43.2% of Active Launceston participants resided in suburbs representing the five lowest deciles of socio-economic indexes for areas (SEIFA) with 19.3% in the lowest decile.

In 2012, the program participation rate for targeted populations, including specific age groups, community members from culturally and linguistically diverse backgrounds, youth at risk, those suffering from a chronic condition, those with a disability (engaged through a
community service provider) and those recovering from illness or injury accounted for 31.6% of the total Active Launceston participation. When comparing participation numbers in targeted programs in comparison to overall Active Launceston participation numbers, the program participation rate for targeted populations was 42.2% in 2015.

**Personal benefits**

There were four ways in which participants perceived Active Launceston had benefited them directly: increased engagement in exercise and activities, health benefits, personal development, and social connectedness.

Participants described becoming more involved in exercise and activity, and with participation leading to other activities, both organised and self-arranged. Active Launceston programs were often reported as the impetus to become more active, and were useful in overcoming barriers to taking that ‘initial step’. It was identified that the program provided a chance to rediscover activities that the participants had previously enjoyed and to try new activities and forms of exercise.

A female participant who had spoken of her recent depression talked of how her involvement gave her the confidence to re-engage in activities she had previously enjoyed.

*One of the things I wanted to do ... was to go back to bushwalking, so I started thinking that I’ve actually got some strength back and feeling a bit stronger. Yeah, so I’ve gone back to that.*

Participants identified direct health benefits that fell into the categories of improved mental health, improved cognition and behaviours (in the case of participants with disabilities), physical health benefits, increased strength and fitness, and weight loss. One participant who had diabetes noted:
My fitness levels have improved and my sugar levels have dropped... I have become fitter and my doctor is happy and I don’t get told off.

It [Active Launceston] gets you prepared to do more, once you start doing Active Launceston you start thinking and you feel better which makes you do other things.

Social connectedness was perceived as a sometimes unexpected benefit, achieved by being part of a group and sharing experiences in a social setting. Participants also identified improvement in confidence, self-esteem, knowledge, skills and motivation, and some found that Active Launceston provided routine and filled a void in their life.

I just loved the fact that it was a social way of meeting people, the class was very varied from younger people to people with disabilities, older people, people with dance experience, people with nil dance experience.

I lost a lot of weight, over 20 kgs, and was very sick and had clinical depression and I saw this [as] something that wasn’t going to be too intense for the time being, and this has been fantastic because it has just been a lovely group, friendly as well as being able to feel that it wasn’t really super hard to get started on something physical. It’s been great.

Qualitative data is supported by the online survey where 79.4% of respondents agreed or strongly agreed that participation in Active Launceston had led to an increase in activities they participated in, and 85% agreed that Active Launceston had improved their knowledge about opportunities for physical activity. Social benefits were supported by online survey responses which revealed that socialising (37.0%), meeting new friends (30.7%) and becoming involved in the community (24.6%) were important outcomes to many participants.
Facilitators of participation

The features of Active Launceston that participants perceived facilitated their participation were the accessibility and no-cost nature of programs, the friendly and non-threatening environments, the capacity of programs to cater for people with different abilities and specific needs, the focus on complementing other community programs, and the enthusiasm of facilitators. Furthermore, participants described the enjoyment they gained from involvement as a feature which facilitated ongoing engagement.

*It’s been really great and it’s been really enjoyable and lovely.*

Stakeholders also recognised the accessible, non-threatening nature of programs within a supportive and structured environment, in addition to providing diverse opportunities that cater broadly and for differing abilities, and the smart use of community facilities as important facilitators.

*It provides a very welcoming and easy way for people to try something new. And the fact that they are free programs and the programs are branded, people know what to expect when they turn up, that there will be someone welcoming and helpful there has made a really big difference.*

*I think the level of social connectedness that’s achieved is remarkable and often just getting people out of their homes and improving their level of social contact and social activity. I think they are certainly improving the health and wellbeing of their community in that way.*

These views were further supported by the online survey in which 45.3% of participants cited the safe and supportive environment for physical activity as important to their participation.
Twenty-one of 23 stakeholders identified management-related aspects that contributed to the success of Active Launceston as: strong consultation, good marketing and promotional efforts, positive relationships with other providers, committed personnel and good organisational processes. There was a perception that this also allowed Active Launceston to contribute to the overall development and coordination of the activities landscape in Launceston, with 19 stakeholders identifying one of the benefits being the partnerships that are developed which facilitate the marketing of other, commercial, physical activity programs and fill gaps in the market. This view was supported by the online survey, with 43.8% of respondents identifying that finding out what else is available in the community had contributed to their participation in physical activity. A stakeholder from a partnering organisation observed:

When those programmes finish I think Active Launceston is very adamant about recommending ... working with stakeholders [to promote their programmes] around the community. I see Active Launceston as a bit of a feeder to a number of stakeholders and providers.

Participants often spoke of the enjoyment that their participation brought them through the opportunity to try something new:

It’s been great for me and one of the things that I liked was the Zumba, it made me realise just how uncoordinated I am. It’s just trying to bring your left arm up with your left leg, but you go home laughing and talking about it for days.

The opportunity to try new things sometimes led to ongoing engagement in activity.
Well I couldn’t even ride a bike until I started [the] group … and it just gave me the ability [to] go faster and on better tracks and longer rides and then I’ve taken it from the class into my own life where I am riding six days a week now.

**Barriers to participation**

Participants and stakeholders identified perceived concerns that may act as barriers to greater participation. They identified the challenges of balancing an ‘open door’ policy with either over or under-attendance at sessions. Difficulties in maintaining effective reach into marginalised and at-risk groups were also identified.

Despite the predominant view from participants and stakeholders that providing free programs was important for success, there was a tension between this and an acknowledgement that sustainability is challenging. Some focus group participants were willing to pay a small price for the activity, but others would not participate if payment was required. Two stakeholders commented that by providing free activities an expectation for this is raised, potentially defeating the objective of providing taster programs that lead to engagement in commercial opportunities.

It was identified by a stakeholder that Active Launceston potentially took participants away from commercial operations, thereby not always increasing participation but rather affecting a transfer from commercial operators to the free program.

*I can see for some of the providers out there that they would have an issue with free programs running, that they see it as competition and how would they attract people to their programs when they have a free alternative, there is definitely an element of that.*
This finding is in contrast to the alternative view that Active Launceston aids the private sector by providing taster programs that lead to participation in commercial programs.

For people like us [Fitness Instructors], the flow on effects of having providers involved in programs. We might pick up new clients and it also provides work for us.

We have had lots of new people come to us as a fee-paying service after trying the free [Active Launceston] program.

The overarching impression of Active Launceston from interviews and focus groups was that it was viewed as a unique model that complements existing models and successfully carries the additional responsibility of providing advocacy for sections of the community less able to access these types of activities. The manager of a partnering organisation noted:

Some of the cohorts that they bring out are very socially isolated, often people with disabilities, mental health issues. The benefits of reducing isolation and getting people out are well beyond how we might define health. There are the social determinant benefits of getting people together.

Impact evaluation
The survey was completed by 2,679 respondents with 879 taking part in 2008, 900 in 2012 and another 900 in 2015 (Table 9). The response rate to the survey was 40.6% (2008), 24.4% (2012) and 18.5% (2015). Gender distribution was similar between the three years (overall p=0.95). The age distribution shifted with a higher number of ‘older’ people responding to the survey over the three years (overall p<0.001). All analyses on physical activity participation were adjusted to account for the age distribution.
Table 9. Gender and Age Distribution Of Telephone Survey Respondents

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2012</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number</td>
<td>879</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>Male (%)</td>
<td>420 (47.8)</td>
<td>413 (45.9)</td>
<td>425 (47.2)</td>
</tr>
<tr>
<td>Female (%)</td>
<td>459 (52.2)</td>
<td>487 (54.1)</td>
<td>475 (52.8)</td>
</tr>
<tr>
<td>15 – 19 years (%)</td>
<td>81 (9.2)</td>
<td>70 (7.8)</td>
<td>30 (3.3)</td>
</tr>
<tr>
<td>20 – 24 years (%)</td>
<td>55 (6.3)</td>
<td>36 (4.0)</td>
<td>35 (3.9)</td>
</tr>
<tr>
<td>25 – 34 years (%)</td>
<td>136 (15.5)</td>
<td>123 (13.7)</td>
<td>36 (4.0)</td>
</tr>
<tr>
<td>35 – 44 years (%)</td>
<td>158 (18.0)</td>
<td>175 (19.4)</td>
<td>147 (16.3)</td>
</tr>
<tr>
<td>45 – 54 years (%)</td>
<td>158 (18.0)</td>
<td>164 (18.2)</td>
<td>183 (20.3)</td>
</tr>
<tr>
<td>55 – 64 years (%)</td>
<td>151 (17.2)</td>
<td>169 (18.8)</td>
<td>218 (24.2)</td>
</tr>
<tr>
<td>65 – 74 years (%)</td>
<td>90 (10.2)</td>
<td>101 (11.2)</td>
<td>156 (17.3)</td>
</tr>
<tr>
<td>75 + years (%)</td>
<td>50 (5.7)</td>
<td>62 (6.9)</td>
<td>95 (10.6)</td>
</tr>
</tbody>
</table>

**Physical activity participation**

A similar proportion of respondents reported participating in any physical activity for exercise, recreation or sport (excluding work, gardening and household chores) in the past 12 months, between the three years of data collection (77.7%, 95%CI 72.0% to 83.8%; 77.1%, 95%CI 71.5% to 83.1%; and 73.6%, 95%CI 68.1% to 79.4% for 2008, 2012 and 2015 respectively, overall p=0.91). Participation in physical activity reduced with increasing age of the respondents (overall p=0.005).

**Intensity of participation**

Respondents who reported undertaking any physical activity in the last 12 months were subsequently asked about the intensity of their participation. There was no significant difference in the proportion of people walking in 2012 and 2015 compared to 2008.
Although more women reported walking than men (IRR 1.14, 95%CI 1.04 to 1.27, p=0.006), the interaction analysis for gender and year of survey did not show any change in walking pattern between the three years. Moderate physical activity was significantly lower in 2012 (IRR 0.82, 95%CI: 0.71 to 0.94, p=0.005) and 2015 (IRR 0.78, 95%CI: 0.68 to 0.90, p=0.002) compared to 2008 (overall p= 0.001) (Figure 3) and this result did not change after adjusting for gender and age distribution (overall p=0.008). Although a higher proportion (overall p<0.001) of respondents reported participating in vigorous physical activity in 2012 (IRR 1.67, 95%CI: 1.36 to 2.03, p<0.001) and 2015 (IRR 1.26, 95%CI: 1.01 to 1.56, p=0.03) compared to 2008, the highest proportion was in 2015 (2015 vs 2012: IRR 1.32, 95%CI 1.09 to 1.60, p=0.007). It was also noted that women were less likely (IRR 0.77, 95%CI: 0.65 to 0.90, p<0.001) to take part in vigorous physical activity than men. The level of participation in vigorous activity decreased with increasing age; however, the interaction between vigorous activity and age or gender did not change the results between the three years.

**Sufficiently active for health**

For respondents who reported participating in physical activity in the last 12 months, there was a gradual increase in the proportion who were sufficiently active for health (i.e. participated in at least 150 minutes of activity per week) over the three years, with a significantly higher proportion achieving sufficient activity in 2015 compared to 2008 (overall p=0.03; 2008 vs 2012: IRR 1.08, 95% CI 0.97 to 1.21, p= 0.14; 2008 vs 2015: IRR 1.16, 95%CI 1.03 to 1.29, p=0.01). This result was also statistically significant when the analysis was adjusted for the age distribution (overall p=0.03).
Figure 3. Proportion of respondents who participated in varying levels of physical activity, 2008, 2012 and 2015.

Respondents who had participated in physical activity for exercise, recreation or sport in the past 12 months reported whether they had participated in walking, moderate physical activity and/or vigorous physical activity in the past 2 weeks. Sufficient physical activity for health was defined as the sum of the number of minutes spent walking, participating in moderate physical activity, and twice the number of minutes spent participating in vigorous physical activity, divided by 2. Respondents who participated in at least 150 minutes of physical activity per week were classified as sufficiently active for health.

* Significantly different (p<0.05) from 2008

# Significantly different (p<0.05) from 2012
Nature of physical activity participation

The proportion of people who took part in organised activities (43.0%, 95% CI 38.27% to 48.26%; 47.26%, 95% CI 42.29% to 52.66%, and 41.99%, 95% CI 37.20% to 47.23% for 2008, 2012 and 2015 respectively) was similar (2008 vs 2012: IRR 1.10, 95% CI 0.93 to 1.29, p= 0.49; 2008 vs 2015: IRR 0.97, 95%CI 0.82 to 1.15, p=0.76) between the three years (overall p=0.3). There were no gender differences; however, younger people (15-24 years) were more (overall p<0.001) inclined to be involved in organised activity than older (25 and above) individuals.

Awareness of Active Launceston

The proportion of respondents who were aware of Active Launceston increased over time (overall p<0.001). Only 31.8% (95%CI 28.2 to 35.8%) of respondents were aware of Active Launceston in 2008 compared to 61.3% (95%CI 56.3 to 66.7%) and 65.1% (95%CI 60.0 to 70.6%) in 2012 and 2015, respectively. More women than men (IRR 1.43, 95%CI 1.28 to 1.59, p<0.001) were aware of Active Launceston. Respondents aged 15-24 and those above 75 years of age were less aware of the initiative than other age groups. Adjusting the analyses for gender and age distribution did not significantly change the difference in the proportion of respondents who were aware of Active Launceston between the three years.

The proportion of respondents who were aware of Active Launceston, and were sufficiently active for health, increased gradually over time (50.4%, 95%CI 41.7 to 60.4%; 53.7%, 95%CI 47.1 to 60.9% and 57.5%, 95%CI 50.7 to 65.0% for 2008, 2012 and 2015, respectively); however, this increase was not significantly different between the three years (overall p=0.10; Figure 4). The proportion of people who were unaware of Active Launceston and sufficiently active for health remained the same over the period of data collection (overall p=0.09, 44.1%, 95% CI 38.2 to 50.7%; 43.6%, 95% CI 35.7 to 52.8% and 45.1%, 95% CI
36.6 to 55.0% for 2008, 2012 and 2015, respectively). Comparison of respondents who were aware or unaware of Active Launceston revealed no difference in the proportion who were sufficiently active in 2008. In contrast, a significant difference was observed for both 2012 and 2015, with a higher proportion of respondents who were aware of Active Launceston being sufficiently active for health in both years (p ≤ 0.01).

![Proportion of respondents who were aware or unaware of Active Launceston and sufficiently active for health, 2008, 2012 and 2015. * Significantly different (p<0.05) from people who were aware of Active Launceston.](image)

Respondents from the 2015 survey who were aware of Active Launceston were also asked whether they had taken part in one or more Active Launceston programs. Ninety-two out of 586 (15.7%; 95%CI 12.7 to 19.2) respondents indicated they had participated in one or more programs. Of these respondents, 58.7% were sufficiently active for health. For people who
had never participated in an Active Launceston program, only 40.9% were sufficiently active for health. The sample size was too small to infer any statistical differences.

**Discussion**

Poor health is high on political agendas (Krech, 2011) and insufficient physical activity is a major risk factor for obesity, type-2 diabetes, heart disease and some cancers (Hallal *et al.*, 2012b; Lear *et al.*, 2017). Across the globe, physical inactivity is recognised as a major determinant of chronic conditions (World Health Organization, 2014b). Research suggests there is an urgent need for global action to address physical inactivity as a public health priority (Kohl 3rd *et al.*, 2012).

Extensive evidence is published on the numerous physical and psychological benefits of physical activity across the human lifespan (Tucker and Carr, 2016; Lear *et al.*, 2017). Australia, like other developed countries, has very low levels of physical activity (Australian Bureau of Statistics, 2012). Tasmania has the lowest levels in the country, with 69.4% reporting inadequate levels of physical activity participation in comparison to Australia which is 67.5% (Population Health, 2013). Australian Physical Activity Guidelines recommend at least 30 minutes of moderate physical activity for adults on at least five days of the week, equating to 150 minutes a week (Australian Department of Health, 2014). Thus developing effective interventions to increase population physical activity levels is undoubtedly important to the health of Tasmanians. Best practice research recommends a multi-strategy approach is most effective to increase population-level physical activity levels; however, there is little evidence of successful initiatives in peer reviewed literature due to the complexities of effectively measuring multi-strategy community-wide projects (Deakin University, 2012). Therefore, the purpose of this study was to use an interrupted time-series process and impact mixed-methods research design in an attempt to effectively measure the...
efficacy of a multi-strategy community-wide physical activity intervention in the Tasmanian regional community of Launceston.

The mixed-method process and impact evaluation of Active Launceston allowed for the triangulation of data. This methodology, including the collection of both qualitative and quantitative data, appears to be a unique aspect of Active Launceston when comparing it to other community-wide multi-strategy physical activity projects in the literature and a key aspect of our five pillar model. This triangulation of data provides evidence for the perceived positive impact on individuals, as observed by individuals themselves and key stakeholders such as program instructors, theoretically leading to community-wide benefit, relevant to the health-promotion sector. As presented in the literature review, Fortmann (1995) reiterates this by suggesting that community-wide effects are better reported through detailed process evaluation with a reduced focus on traditional expensive outcome-based quantitative evaluation. Mummery and Brown (2016) take the concept further to suggest more comprehensive process measures allow for a greater insight into the reach of strategies and make it possible to conduct analysis of the contributions of strategies to community-wide behaviour change.

We have shown qualitatively that Active Launceston impacted profoundly on individuals and resulted in significant changes in their level of physical activity, aiding improvements in physical and mental health and levels of social engagement. Quantitatively, results demonstrate that participation levels in walking remained constant over the years, while the proportion of people participating in moderate physical activity gradually declined. In contrast, levels of participation in vigorous physical activity were found to be significantly greater in 2012 and 2015 compared to 2008. The difference in vigorous physical activity observed between 2012 and 2015 (Figure 3) can be attributed to a higher proportion of
respondents aged over 45 years in 2015. Sufficient activity for health as defined in the current study represents a combination of these three physical activity intensity levels. Although there is a significant decrease in moderate physical activity levels, and despite an older cohort of respondents in 2015, a statistically significant increase in the number of people engaging in sufficient physical activity for health was observed. In isolation, these changes cannot be directly attributed to Active Launceston; however, when combined with the significant differences observed in 2012 and 2015, where those who were aware of Active Launceston were more likely to be sufficiently active for health than those who were unaware of Active Launceston, a plausible relationship can be proposed. There was also an encouraging positive trend observed for those who had participated in an Active Launceston program and were sufficiently activity for health, further strengthening this assertion. Future longitudinal and comparative research is required to confirm a causal relationship.

Interventions to increase physical activity levels are common; however, much of the research has focused on the impact of structured programs that target small groups of individuals with specific illness (Bazzano et al., 2009). Few examples exist of community-wide programs that use multi-strategy and wide-scale approaches to promote physical activity (Deakin University, 2012). This is likely to be due to the complexities of implementing community-wide initiatives (Brown et al., 2003; O'Hara et al., 2012). However, the value of implementing physical activity programs for specific populations has been established. For instance, a targeted initiative designed to reduce childhood obesity has been successful in demonstrating the value of ‘a multi-strategy, multi-setting community development approach’ (Pettman et al., 2010). Peterson et al. (2008) demonstrated that adults with development disabilities can improve their lifestyles through a community-based program. Pardo et al. (2018) demonstrate that participating in regular physical activity produces multiple benefits for adolescents in Spain. A community-based project targeting women
demonstrated that developing a program for a specific population can succeed in increasing physical activity participation (Wen et al., 2002). These studies, provided as an example of many, demonstrate that strategies to increase physical activity are apparent, but the effect sizes are often small and thus the strategies are not widely adopted (Bauman et al., 2012). Therefore, the benefit of community-wide multi-strategy interventions such as Active Launceston is evident.

Through community engagement, Active Launceston adopted a multi-strategy approach at the population level to increase physical activity, and success is reflected in the program’s high numbers of participant and session attendance (n = 30,342 in comparison to Pawtucket for example n = 10,051) and broad levels of engagement. This approach aligns with Eaton and colleagues’ (1999) research that highlights the importance of population-based interventions, suggesting that a wide range of individuals should be involved to increase population physical activity levels. Sallis and Bauman (1998) also argue that ‘population-wide interventions are needed’ to reduce the burden of ill health, but that policy and environmental interventions will carry the most weight when attempting to change a community’s behaviour. This ecological approach (Golden et al., 2015; Richard et al., 2011) resonates with the Active Launceston framework, which works in partnership with local and state governments, and aims to influence policy and environmental interventions while promoting the benefit back to the community.

Adopting multiple strategies to promote the benefits of physical activity and engage communities in higher rates of participation is seen to be optimal by researchers (Baker et al., 2015). Active Launceston used multiple strategies across five key pillars: supportive environments, mass media, community initiatives, professional support and multifaceted evaluation. Process evaluation demonstrated that these multiple strategies enabled the Active
Launceston health promotion initiative to achieve brand and service recognition and reverence across the community and across demographic cohorts evidenced in program recruitment and retention. To achieve these outcomes, Active Launceston was underpinned by the Ottawa Charter of health promotion (World Health Organization, 2014a).

The Ottawa Charter defines health promotion as “the process of enabling people to increase control over, and to improve, their health” (World Health Organization, 2014a). Within the university sector, the Okanagan Charter for Health Promoting Universities, suggests that responsibility should be accepted by higher education institutions for their potential influence and leadership role in improving societal health and wellbeing, through collaborations, networking and community engagement (University of British Columbia, 2015). In an interview in November 2012, David Rich, Provost, University of Tasmania, suggested that, together with research and teaching, university–community engagement has emerged as one of the key elements of university core business. It has evolved to a point where it is no longer regarded as something that is separate from, or an add-on to, other core interests, but is integral to all the operations of the university.

Engagement Australia (2014) defines engagement as:

“the cultivation of relationships that lead to productive partnerships which yield mutually beneficial outcomes to universities and their partners through the application and utilisation of university resources including staff, students, infrastructure and knowledge and across the breadth of university activities including research, education and service.”

Our qualitative research shows that the Active Launceston partnership, managed by the University of Tasmania, leveraged resources through a level of ownership from the community and its leaders, resulting in the successful engagement of target audiences,
including those from disadvantaged backgrounds who are traditionally difficult to engage (Farrell et al., 2014; Werneck et al., 2018).

Elements that affect why some people are active and others are not can be categorised as: intrapersonal, interpersonal, environmental, regional, national and global. These factors may work alone or together and impact one’s ability and/or willingness to participate in physical activity (Macera and Ainsworth, 2012). Low socio-economic status is one of these elements that has a negative relationship with physical activity participation (Macera and Ainsworth, 2012). Based on the 2011 ABS Census, the socio-economic indexes for areas (SEIFA) ranking for Tasmania is 961 (Australian Bureau of Statistics, 2013). Comparing on a national level, this is considered an area of relatively greater disadvantage. A recent study shows the gap between physical activity participation in the disadvantaged and the advantaged populations has increased, so the need for intensive interventions for these subgroups is warranted (Bauman et al., 2012). Approximately 43% of Active Launceston participants resided in suburbs that are among the state’s five lowest deciles of SEIFA, with 19.3% in the lowest decile, thereby addressing this gap.

The evaluation findings of Active Launceston support claims that health-promoting interventions that are community-focused have the potential not only to target behavioural risk factors for disease, but also to improve health outcomes by contributing to social capital of the community. Hawe and Shiell (2000) provide a commentary on the relationship between social capital and health promotion, and attempt to understand how communities, environments and relationships can improve health and wellbeing. They identify the following as being crucial to successfully harnessing social capital: careful interpretation of power and empowerment, building relational ties, capacity-building of communities and individuals, and creating healthy public places and policies. Qualitatively, we have identified
the potential of Active Launceston to contribute to this objective by empowering participants to make changes to their lifestyle, building relationships with other community members around the shared goal of increasing physical activity, and supporting the broader physical activity industry. The findings appear to be unique to the current study, which has found a positive relationship between the development of social capital and a community-wide multi-strategy physical activity project. However, it is recognised there is still more work to be done, as there remain many people who are not engaged in sufficient physical activity in the Launceston community.

It is apparent that there is a hiatus between the research on physical activity interventions and the ‘real life’ delivery of evidence-based initiatives in practice (Bazzano et al., 2009). Mittelmark and colleagues (1993) discuss a plethora of problems with collecting data over time, such as changing secular trends, migration patterns, and changes in resourcing. They therefore suggest that it can be a trap to pay too much attention to the material aspects of an intervention. They emphasise the need for service-oriented (as opposed to research-oriented) programs and to be realistic in how the data that is collected is emphasised in the literature. Mittelmark et al. (1993) recommend using participation rates as a primary outcome measure, and they also suggest that process evaluation is at least, if not more, important than assessing risk factor change. Mummery and Brown (2016) in their paper entitled ‘Whole of community physical activity interventions: easier said than done’ conclude that whole-of community interventions are a big challenge for academics but they still hold huge potential to make population-level changes to physical activity. They suggest that researchers need to understand more about the usefulness of individual strategies, how to engage marginalised groups, effectiveness of community groups and the basic mechanisms of community engagement. The Stanford Five City Project and the MHHP provide an example of these difficulties, as both were deemed to be ineffective by researchers; however, it should be
recognised that they reported only incidence and prevalence data (objective measures), but
did not measure other important elements of physical activity projects such as social
outcomes including social capital. Mummery and Brown (2016) site this as a ‘flaw’ in other
whole-of-community projects, as a lack of process information does not allow for an analysis
into the strategies implemented to effect behaviour change nor the social outcomes they
create. Qualitative results from this study demonstrate that Active Launceston did measure
social outcomes and, coupled with quantitative data, the findings suggest Active Launceston
supported a wide range of individuals to engage in regular physical activity, and increase
their level of social engagement. Quantitative results of Active Launceston also demonstrate
a significant increase in those who are sufficiently active for health, and a positive
relationship between those who were aware of Active Launceston and those who were
sufficiently active for health. As outlined above and as demonstrated in our Five Pillars
model, this level of analysis appears to be unique to the current study when comparing to
other community-wide case studies presented; it provides an important understanding of one
of the elements that contribute to population-level behaviour change. Given the results of the
process and impact evaluation of Active Launceston, with continuation of the program, the
next phase in the evaluation of the efficacy of this type of multi-strategy community-wide
intervention is to assess outcome measures including: morbidity and mortality statistics,
hospitalisations and healthcare costs. It is acknowledged that the current research design will
need be altered to successfully measure these outcomes.

**Limitations**

As discussed above, measuring and interpreting outcomes at a community level is
challenging, and inherent limitations apply to this evaluation of Active Launceston. This
thesis’ contribution is an evaluation that shares the difficulties of reliably measuring and
interpreting outcomes in an uncontrolled environment (Deakin University, 2012; World
Health Organization, 2001; Sanson-Fisher et al., 1996). As per all non-observatory research, there is the potential for self-report bias (Prince et al., 2008) and bias due to declining survey response rates (Brick and Williams, 2013). The lack of a controlled environment and no parallel control group make attributing a causal relationship between the initiative and the population survey results challenging (Baker et al., 2015). Data collected in this study is non-comparable to Tasmanian state level data due to the Tasmanian Health Survey adopting questions from the Victorian Health Survey rather than questions from the Australian Exercise Recreation and Sport Survey (Australian Sports Commission, 2008) which is utilised across all other Australian states and territories.

It must be noted, that with limited resources and an understanding that allocating funding directly to the intervention community would result in a higher impact on behaviour change (Fortmann et al., 1995) rather than diluting the reach and impact by spreading the funding across both a control and an intervention community (where cofounding uncontrollable variables would still exist and influence validity), Active Launceston learnt from the failings of other community-wide interventions, such as the Stanford Five Cities and MHHP, by controlling this element of the study design (Fortmann et al., 1995).
Conclusion

The findings suggest Active Launceston did support a wide range of individuals to engage in regular physical activity, and increase their level of social engagement. We conclude that establishing multi-faceted partnerships to improve participation in physical activity is an effective option for governments, universities and the community sector. Our findings provide a rationale for implementing community-wide interventions that encourage and support people to increase their physical activity levels.

Implications for research

Initiatives such as Active Launceston provide an opportunity to explore the elements of community-wide physical activity interventions that contribute to success (Deakin University, 2012). The longitudinal outcomes of participants and the development of social capital can also be explored through interventions such as Active Launceston.

Implications for practice

While they are not without challenges, establishing multi-faceted partnerships to improve participation in physical activity is an effective option for governments, universities and the community sector. Our findings provide a rationale for implementing community-wide interventions that encourage and support people to increase their physical activity levels.
References


Jones, J. and Barry, M. M. (2011a) Developing a scale to measure synergy in health promotion partnerships. Global Health Promotion, 18, 36-44.


Engaging Australia: University Community Engagement and Service-Learning

Edited by

Isabelle Bartkowiak-Théron
and Kathryn Anderson
APPENDIX 2 – Overall evaluation results (Manuscript submitted for review and publication)

TITLE

Mixed-method evaluation of a community-wide physical activity programme in [City, Country]

MANUSCRIPT TYPE

Public health practice

KEY WORDS

Health promotion, wellbeing, exercise, social capital, social engagement

INTRODUCTION

The World Health Organisation identifies physical inactivity as a major risk factor for morbidity and premature mortality.\(^1\) Approximately 5.3 million deaths per year could be avoided if all inactive people become at least moderately active(\cite{Lee, et al., 2012}).\(^2\) Interventions to increase physical activity levels are common; however, much of the research has focused on the impact of structured programmes that target small groups of individuals with specific illnesses.\(^3\) Few examples exist of community-wide programmes that use multi-strategy and wide-scale approaches to promote physical activity.\(^4\) This may be due to the complexities of implementing community-wide initiatives.\(^5\)

Intersectoral partnerships are fundamental to improving health.\(^6\) The current programme was launched in June 2008 through a partnership between the University of [State], [City]City Council and the [State] State Government. This partnership was established with the understanding that synergistic outcomes would be achieved at a higher rate than would be achieved by individual partners working alone.\(^7\)
ActiveCity adopted a population-based approach with a goal to mobilise community members to increase their participation in physical activity by filling gaps in provision, reducing barriers and targeting those with the highest need.

ActiveCity is located in the regional municipality of [City] in [State], Australia. Only 43.4% of [State population] participate in sufficient physical activity to meet the Australian Physical Activity Guidelines, which is lower than the majority of other Australian states (Department of Health and Human Services, 2007).

Effectively measuring the outcomes of community engagement programs is problematic. Bazzano and colleagues suggest there is a hiatus between the research on physical activity interventions and the ‘real life’ delivery of evidence-based initiatives in practice. Mittelmark and colleagues discuss the need for service-oriented programmes (as opposed to research-oriented) to be realistic in the data that is collected, with process evaluation being at least as, if not more, important than assessing risk factor change, and recommends using participation rates as a primary outcome measure.

We are reporting on the process evaluation of ActiveCity during its implementation and establishment phase, and the changes in community physical activity participation over this period.

METHODS

ActiveCity delivers a suite of free community-based physical activity programmes and events for people of all ages and abilities. Programmes are provided for specific age-groups, low socioeconomic communities, culturally and linguistically diverse communities, youth at risk, those with a chronic condition or disability, and those recovering from illness or injury.
ActiveCity activities include diverse programs such as walking, running, cycling, dancing, hydrotherapy, archery, orienteering, yoga, tai chi, rock climbing, sailing and laser tag.

ActiveCity contracts industry personnel (yoga instructors, personal trainers), sports clubs and university students to deliver programmes. The duration of each program is typically eight weeks. ActiveCity is supported by an extensive marketing campaign utilising radio, print, television, web and social media to promote programs and events. Through an endorsement process, ActiveCity also supports and promotes other physical activity providers across the community.

This evaluation was approved by the [State] Human Research Ethics Committee (Social Science) Reference Nos. H0010054, H0013292, H0012334.

**Process evaluation**

Process evaluation was measured using participant focus groups, stakeholder interviews and the analysis of socio-demographic data and participation statistics. Socio-demographic information was collected from participants prior to the commencement of each physical activity session along with the number of participants in attendance.

In 2012 six participant focus groups were conducted following the final session of six programmes: ‘Growing Older Living Dangerously’, ‘Active Bike’, ‘Active and Inclusive’, ‘Stretch and Strengthen’, ‘Gentle Exercise’ and ‘Active Kids’. In 2015 three participant focus groups were conducted following the final session of three ActiveCity programmes: Active Swim (for migrants and refugees), Active Sports and Active Bike. A final focus group was held in a low socioeconomic community with an open invitation to the general public.

These focus groups were advertised via email, social media and the ActiveCity website. They were facilitated by one of the authors (KO) who had no other involvement in the
administration of the programme. Focus-group interviews were semi-structured with all discussions audio recorded and transcribed verbatim. Questions related to: involvement and participation in ActiveCity, how it influenced their physical activity and other aspects of their lives, and what they saw as the strengths and challenges of the programme.

Semi-structured interviews were conducted with key stakeholders representing: funding bodies, project partners, service providers, and the community. The interviews were conducted via telephone or face-to-face and were facilitated by one of the authors (KO) who had no other involvement in the administration of the programme. Questions related to: stakeholders’ involvement with ActiveCity, perceived benefits to individuals and the community, and perceived strengths and potential improvements.

An inductive thematic approach\textsuperscript{12,13} was used to analyse qualitative data from participant focus groups and stakeholder interviews. Identified themes were organised according to the four overarching process evaluation questions:

1. Did ActiveCity reach a broad demographic across age ranges and economic backgrounds?
2. What were the perceived personal benefits to participants?
3. What were the perceived facilitators of participation?
4. What were the perceived barriers to participation?

The analysis was conducted using the NVivo 10 (QSR International) software program by an independent researcher.

**Impact evaluation**

Community-wide engagement in physical activity was measured using cross-sectional serial random telephone surveys of community members prior to commencement of the
programme in 2008, after the programme had been running for 4½ years in 2012 and a further 3 years in November 2015. These surveys were administered by an independent contracted researcher. Quota sampling was deployed to achieve minimum age and gender quotas. Interviewers requested the youngest person in the household aged 15 years and over to respond to the survey. Sample size was determined based on a population of 85,591 residing in Greater City aged 15 years or over, providing a maximum margin of error for the total sample of +/- 3.25% at the 95% confidence level. The survey was conducted using Computer Assisted Telephone Interviewing Survey System software. Survey respondents were selected using a randomised land-line telephone-number generator.

The survey included questions regarding the type, amount, regularity and intensity of physical activity, allowing for the calculation of sufficient activity for health. Questions were combined from the Australian Exercise Recreation and Sport Survey, questions 1 and 3 and the National Health Survey 2007-2008, EXER_Q1, 3, 6, 8, 11, 13. In addition respondents were asked if they were aware of ActiveCity and if they had ever participated in any ActiveCity activities.

Sufficient activity was calculated by combining the time spent walking, participating in moderate activity and twice the time spent in vigorous activity over the last two weeks, divided by two. The time spent doing vigorous activity is doubled because it is considered to confer greater health benefits than moderate activity. The total activity time was divided by two to obtain a weekly average. Sufficient physical activity for health benefits was classified as participation in at least 150 minutes of activity per week.

Results were entered into Microsoft Excel (Microsoft, Redmond, USA) and then imported into Stata 13 (StataCorp, College Station, Texas) for analysis. All data was statistically analysed with Poisson regression (Incidence Rate Ratio; 95% confidence
interval), to assess the differences in physical activity participation between the different years. Post estimation Holm test analysis was used to adjust p values for multiple comparisons. GraphPad Prism (Version 6, San Diego CA) was used to plot the data.

Impact evaluation aimed to address the following overarching questions:

1. Did participation in physical activity increase between 2008 and 2015?
2. Were there any changes in the intensity of physical activity participation?
3. Was the level of physical activity participation sufficient for health?
4. Did the nature of physical activity participation (structured, unstructured) change between 2008 and 2015?
5. Did the awareness of ActiveCity improve throughout the duration of the programme?

RESULTS

Process evaluation

Between mid-2008 and the end of 2015, ActiveCity coordinated 190 community programmes that attracted 11,887 attendees who attended 30,342 sessions, amounting to approximately 38,088 hours of physical activity. Typically 1000 new individuals joined ActiveCity annually.

In 2012, forty-one community members attended six participant focus groups and 13 stakeholders were interviewed. In 2015, thirty-three community members attended four focus groups and 10 stakeholders were interviewed.

Demographic characteristics from enrolment data
Demographic information was provided at enrolment by 6,077 ActiveCity participants. The difference in the number of participants whose demographic data was collected compared with the total participation rate (n=11,887) is due to data collection limitations including; incomplete forms, repeat participation, and demographic data unable to be collected at major events. ActiveCity initiatives engaged community members ranging in age from 1 to 87 years. Over one third of participants (35.1%) were aged under 15, while 14.5% were aged over 55. Two thirds of participants were female (65.8%), and over one-third (37.7%) were health care card holders. 43.2% of Active Launceston participants resided in suburbs representing the five lowest deciles of socio-economic indexes for areas (SEIFA); with 19.3% in the lowest decile.

In 2012 the program participation rate for targeted populations, including specific age-groups, culturally and linguistically diverse communities, youth at risk, those with a chronic condition or disability and those recovering from illness or injury accounted for 31.6% of the total ActiveCity participation. In 2015, the program participation rate for these targeted populations was 42.2%.

**Personal benefits**

There were four ways in which participants perceived ActiveCity had benefited them directly: increased engagement in exercise and activities, health benefits, personal development and social connectedness.

Participants described becoming more involved in exercise and activity, with participation leading to other activities. ActiveCity programmes were often reported as the impetus to becoming more active, and were useful in overcoming barriers to taking that ‘initial step.’ ActiveCity provided a chance to rediscover activities that the participants had previously enjoyed and to try new activities and forms of exercise.
A female participant who had spoken of her recent depression talked of how her involvement gave her the confidence to re-engage in activities she had previously enjoyed.

One of the things I wanted to do … was to go back to bushwalking, so I started thinking that I’ve actually got some strength back and feeling a bit stronger. Yeah, so I’ve gone back to that.

Participants identified direct health benefits including improved mental and physical health, improved cognition and behaviours (in the case of participants with disabilities), increased strength and fitness, and weight loss. One participant who had diabetes noted:

My fitness levels have improved and my sugar levels have dropped… I have become fitter and my doctor is happy and I don’t get told off.

Social connectedness was perceived as a sometimes unexpected benefit, achieved by being part of a group and sharing experiences in a social setting. Participants also identified improvement in confidence, self-esteem, knowledge, skills and motivation, and some found that ActiveCity provided routine and filled a void in their life.

I lost a lot of weight, over 20 kgs, and was very sick and had clinical depression and I saw this [as] something that wasn’t going to be too intense, and this has been fantastic because it has just been a lovely group, friendly as well as being able to feel that it wasn’t really super hard to get started on something physical. It’s been great.

**Facilitators of participation**

The features of ActiveCity that participants perceived facilitated their participation were the accessibility and no-cost nature of programmes, the friendly and non-threatening environments, the capacity of programmes to cater for people with different abilities and needs, the focus on complementing existing community programmes, and the enthusiasm of
facilitators. Furthermore, participants described the enjoyment they gained from involvement as a feature which facilitated ongoing engagement.

Stakeholders also recognised the accessible, non-threatening nature of programmes within a supportive and structured environment, in addition to providing diverse opportunities that cater broadly for differing abilities, and the smart use of community facilities as important facilitators.

I think the level of social connectiveness that’s achieved is remarkable and often just getting people out of their homes and improving their level of social contact and social activity. I think they are certainly improving the health and wellbeing of their community in that way.

Twenty one of 23 stakeholders identified management-related aspects that contributed to the success of ActiveCity with: strong consultation, good marketing and promotional efforts, positive relationships with other providers, and committed personnel and good organisational processes facilitating its success. There was a perception that this also allowed ActiveCity to contribute to the overall development and coordination of the activities landscape in City, with nineteen stakeholders identifying one of the benefits being the partnerships that are developed which facilitate the marketing of other commercial, physical activity programmes and fill gaps in the market. A stakeholder from a partnering organisation observed:

When those programmes finish I think ActiveCity is very adamant about recommending … working with stakeholders [to promote their programmes] around the community. I see ActiveCity as a bit of a feeder to a number of stakeholders and providers.
Participants often spoke of the enjoyment that their participation brought them through the opportunity to try something new:

It’s been great for me and one of the things that I liked was Zumba, it made me realise just how uncoordinated I am. It’s just trying to bring your left arm up with your left leg, but you go home laughing and talking about it for days.

The opportunity to try new things sometimes led to ongoing engagement in activity.

Well I couldn’t even ride a bike until I started [the] group … and it just gave me the ability [to] go faster and on better tracks and longer rides and then I’ve taken it from the class into my own life where I am riding six days a week now.

Barriers to participation

Participants and stakeholders identified potential barriers to greater participation. The challenges of balancing an ‘open door’ policy with either over or under attendance at sessions, and difficulties in maintaining effective reach into marginalised and at-risk groups was identified.

Despite the predominant view from participants and stakeholders that providing free programmes was important for success, the challenge of sustainability was acknowledged. Some focus group participants were willing to pay a small price for the activity, but others would not participate if payment was required. Two stakeholders commented that by providing free activities, an expectation for this is raised, potentially defeating the objective of providing taster programmes that lead to engagement in commercial opportunities.

It was identified by one stakeholder that ActiveCity potentially took participants away from commercial operations, thereby not always increasing participation but rather affecting a transfer from commercial operators to the free program. This finding is in contrast to the
alternative view that ActiveCity aids the private sector by providing taster programs which lead to participation in commercial programs:

For people like us [Fitness Instructors], the flow on effects of having providers involved in programs is great as we might pick up new clients and it also provides work for us.

We have had lots of new people come to us as a fee-paying service after trying the free [ActiveCity] program.

The overarching impression of ActiveCity from interviews and focus groups was that it was viewed as a unique model that complements existing models and successfully carries the additional responsibility of providing advocacy for sections of the community less able to access these types of activities. The manager of a partnering organisation noted:

Some of the cohorts that they bring out are very socially isolated, often people with disabilities, mental health issues. The benefits of reducing isolation and getting people out are well beyond how we might define health. There are the social determinant benefits of getting people together.

Impact Evaluation

The telephone survey was completed by 2,679 respondents with 879 taking part in 2008, 900 in 2012 and another 900 in 2015 (Table 1). The response rate to the survey was 40.6% (2008), 24.4% (2012) and 18.5% (2015). Gender distribution was similar between the three years (overall p=0.95). The age distribution shifted to the right with higher numbers of ‘older’ people responding to the survey over the three years (overall p<0.001). All analyses on physical activity participation were adjusted to account for the age distribution.
Table 1. Gender and age distribution of telephone survey respondents

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2012</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number</td>
<td>879</td>
<td>900</td>
<td>900</td>
</tr>
<tr>
<td>Male (%)</td>
<td>420 (47.8)</td>
<td>413 (45.9)</td>
<td>425 (47.2)</td>
</tr>
<tr>
<td>Female (%)</td>
<td>459 (52.2)</td>
<td>487 (54.1)</td>
<td>475 (52.8)</td>
</tr>
<tr>
<td>15 – 19 years (%)</td>
<td>81 (9.2)</td>
<td>70 (7.8)</td>
<td>30 (3.3)</td>
</tr>
<tr>
<td>20 – 24 years (%)</td>
<td>55 (6.3)</td>
<td>36 (4.0)</td>
<td>35 (3.9)</td>
</tr>
<tr>
<td>25 – 34 years (%)</td>
<td>136 (15.5)</td>
<td>123 (13.7)</td>
<td>36 (4.0)</td>
</tr>
<tr>
<td>35 – 44 years (%)</td>
<td>158 (18.0)</td>
<td>175 (19.4)</td>
<td>147 (16.3)</td>
</tr>
<tr>
<td>45 – 54 years (%)</td>
<td>158 (18.0)</td>
<td>164 (18.2)</td>
<td>183 (20.3)</td>
</tr>
<tr>
<td>55 – 64 years (%)</td>
<td>151 (17.2)</td>
<td>169 (18.8)</td>
<td>218 (24.2)</td>
</tr>
<tr>
<td>65 – 74 years (%)</td>
<td>90 (10.2)</td>
<td>101 (11.2)</td>
<td>156 (17.3)</td>
</tr>
<tr>
<td>75 + years (%)</td>
<td>50 (5.7)</td>
<td>62 (6.9)</td>
<td>95 (10.6)</td>
</tr>
</tbody>
</table>

Physical activity participation

A similar proportion of respondents reported participating in any physical activity for exercise, recreation or sport (excluding work, gardening and household chores) in the past 12 months, between the three years of data collection (77.7%, 95%CI 72.0% to 83.8%; 77.1%, 95%CI 71.5% to 83.1%; and 73.6%, 95%CI 68.1% to 79.4% for 2008, 2013 and 2015 respectively, overall p=0.91). Participation in physical activity reduced with increasing age of the respondents (overall p=0.005).

Intensity of participation

Respondents who reported undertaking any physical activity in the last 12 months were subsequently asked about the intensity of their participation in physical activity in the past 2 weeks. There was no significant difference in the proportion of people walking in 2012 and
2015 compared to 2008 (overall \( p=0.32 \)) (Figure 1). Although more women reported walking than men (IRR 1.14, 95%CI 1.04 to 1.27, \( p=0.006 \)), the interaction analysis for gender and year of survey did not show any change in walking pattern between the three time periods. Moderate physical activity was significantly lower in 2012 (IRR 0.82, 95%CI: 0.71 to 0.94, \( p=0.005 \)) and 2015 (IRR 0.78, 95%CI: 0.68 to 0.90, \( p=0.002 \)) compared to 2008 (overall \( p=0.001 \)) (Figure 1) and this result did not change after adjusting for gender and age distribution (overall \( p=0.008 \)). Although a higher proportion (overall \( p<0.001 \)) of respondents reported participating in vigorous physical activity in 2012 (IRR 1.67, 95%CI: 1.36 to 2.03, \( p<0.001 \)) and 2015 (IRR 1.26, 95%CI: 1.01 to 1.56, \( p=0.03 \)) compared to 2008, the highest proportion was in 2012 (2015 vs 2012: IRR 1.32, 95%CI 1.09 to 1.60, \( p=0.007 \)). It was also noted that women were less likely (IRR 0.77, 95%CI: 0.65 to 0.90, \( p<0.001 \)) to take part in vigorous physical activity than men. The level of participation in vigorous activity decreased with increasing age; however, the interaction between vigorous activity and age or gender did not change the results between the three years.
For respondents who reported participating in physical activity in the last 12 months, there was a gradual increase in the proportion who were sufficiently active for health over the three years (Figure 1) with a significantly higher proportion achieving sufficient activity in 2015 compared to 2008 (overall p=0.03; 2008 vs 2012: IRR 1.08, 95%CI 0.97 to 1.21, p= 0.14; 2008 vs 2015: IRR 1.16, 95%CI 1.03 to 1.29, p=0.01). This result was also statistically significant when the analysis was adjusted for the age distribution (overall p=0.03).
**Nature of physical activity participation**

The proportion of people who took part in organised activities (43.1%, 95% CI 38.3% to 48.4%; 47.3%, 95% CI 42.3% to 52.7%, and 42.0%, 95% CI 37.2% to 47.2% for 2008, 2012 and 2015 respectively) was similar (2008 vs 2012: IRR 1.10, 95% CI 0.93 to 1.29, p = 0.49; 2008 vs 2015: IRR 0.97, 95% CI 0.82 to 1.15, p = 0.76) between the three time periods (overall p = 0.3). There were no gender differences; however, younger people (15-24 year) were more inclined to be involved in organised activity than older (25 and above) individuals (overall p < 0.001).

**Awareness of ActiveCity**

The proportion of respondents who were aware of ActiveCity increased over time (overall p < 0.001). Only 31.8 (95% CI 28.2 to 35.8) percent of respondents said they were aware of ActiveCity in 2008 compared to 61.3 (95% CI 56.3 to 66.7) percent and 65.1 (95% CI 59.9 to 70.6) percent in 2012 and 2015, respectively. More women than men (IRR 1.43, 95% CI 1.28 to 1.59, p < 0.001) were aware of ActiveCity. Respondents aged 15-24 and those above 75 years of age were less aware of the initiative than other age groups. Adjusting the analyses for gender and age distribution did not affect these results.

The proportion of respondents who were aware of ActiveCity, and were sufficiently active for health, increased gradually over time (50.4%, 95% CI 41.71 to 60.4%; 53.7%, 95% CI 47.1 to 60.9% and 57.5%, 95% CI 50.7 to 65.0% for 2008, 2012 and 2015, respectively); however, this increase was not significantly different between the three years (overall p = 0.10). The proportion of people who were unaware of ActiveCity and sufficiently active for health remained the same over the period of data collection (overall p = 0.09, 44.1%, 95% CI 38.2 to 50.7%; 43.6%, 95% CI 35.7 to 52.8% and 45.1%, 95% CI 36.6 to 55.0% for 2008, 2012 and 2015, respectively). Comparison of respondents who were aware or unaware of
ActiveCity revealed no difference in the proportion who were sufficiently active in 2008. In contrast, a significant difference was observed for both 2012 and 2015, with a higher proportion of respondents who were aware of ActiveCity being sufficiently active for health in both years ($p \leq 0.01$).

Respondents, from the 2015 survey, who were aware of ActiveCity were also asked whether they had taken part in one or more ActiveCity programmes. Ninety two out of 586 (15.7%; 95%CI 12.7 to 19.3%) respondents indicated they had participated in one or more programmes. Of these respondents, 58.7% were sufficiently active for health. For people who had never participated in an ActiveCity programme, only 40.9% were sufficiently active for health. The sample size was too small to infer any statistical differences.

DISCUSSION

Across the globe, physical inactivity is recognised as a major determinant of chronic conditions.\(^1\) Research suggests there is an urgent need for global action to address physical inactivity as a public health priority.\(^{19}\)

The value of implementing physical activity programmes for specific populations has been established. For instance, a targeted initiative designed to reduce childhood obesity has been successful in demonstrating the value of ‘a multi-strategy, multi-setting community development approach’.\(^{20}\) Peterson demonstrated that adults with disabilities can improve their lifestyles through a community-based programme.\(^{21}\) Similarly, a community-based project targeting women demonstrated that developing a programme for a specific population can succeed in increasing physical activity participation.\(^{22}\) These studies demonstrate that strategies to increase physical activity are apparent, but the effect sizes are often small and are not widely adopted.\(^{23}\) The ActiveCity model appears to be unique through engagement of a large number of different cohorts within the community under one umbrella.
In a systematic review of initiatives that attempt to increase physical activity, Kahn et al. concluded that informational interventions such as community-wide education campaigns could be effective if they are delivered along with behavioural change and supportive social interventions. Hillsdon and colleagues also suggest that some short and mid-term participation increases can come from large interventions, although programmes that also offer professional guidance and ongoing care will produce better outcomes. Bauman, Finegood and Matsudo have argued that to facilitate community-wide increases in physical activity, there are three essential elements: supportive physical environments (e.g. trails, sports fields), mass media educational campaigns and community-wide interventions.

Therefore, the benefit of community-wide multi-strategy interventions such as ActiveCity is evident.

ActiveCity is a population-based approach to increasing physical activity. This aligns with Eaton and colleagues’ research that highlights the importance of population-based interventions, suggesting that a wide range of individuals should be involved.

The Ottawa Charter defines health promotion as “the process of enabling people to increase control over, and to improve, their health”. Within the university sector, the Okanagan Charter for Health Promoting Universities, suggests that responsibility should be accepted by higher education institutions for the potential influence and leadership role in improving societal health and well-being through collaborations and networking. Our research shows that through a level of ownership from the community and its leaders, the ActiveCity partnership managed by the University of [State], leveraged resources and reached target audiences, including those who are traditionally difficult to engage from disadvantaged backgrounds. Based on the 2011 ABS Census (www.atlas.id.com.au/[City]), the socio-economic indexes for areas (SEIFA) ranking for [City] is 961 and nationally is
considered an area of relative disadvantage. A recent study shows the gap between physical activity participation in disadvantaged and advantaged populations has increased, so the need for intensive interventions for these subgroups is warranted. 23 43.2% of ActiveCity participants resided in suburbs representing the state’s five lowest deciles of socio-economic indexes for areas (SEIFA) (most disadvantaged); with 19.3% in the lowest decile, thereby addressing this gap.

The evaluation of ActiveCity supports claims that health-promoting interventions that are community-focused have the potential not only to target behavioural risk factors for disease, but also to improve health outcomes by contributing to social capital of the community. Hawe and Shiell provide a commentary on the relationship between social capital and health promotion, and attempt to understand how communities, environments and relationships can improve health and well-being. 31 They identify the following as being crucial to successfully harnessing social capital: careful interpretation of power and empowerment, building relational ties, capacity building of communities and individuals, and creating healthy public places and policies. Qualitatively we have identified the potential of ActiveCity to contribute to this objective by empowering participants to make changes to their lifestyle, building relationships with other community members around the shared goal of increasing physical activity, supporting the broader physical activity industry and promoting [City] as a city that encourages and values a physically active lifestyle.

Effectively measuring the outcomes of community engagement programs can be problematic. In a systematic review, Baker and colleagues found no evidence that community-wide initiatives increase population-based physical activity levels. 32 However, they conclude that this result may be due to serious methodological issues with studies rather than the success or failure of the intervention, and that rigorous evaluation with reliable outcome measures and comparison communities are required. In their survey of community-
based projects for preventing obesity in [Country], Nichols et al. concluded that while these programmes represent a large investment by both government and non-government sectors, they often go unrecognised due to lack of effective evaluation, and this deficiency should be addressed in order to ensure their future contribution to public health and policy development is acknowledged.33

Our contribution is an evaluation that shares the difficulties of reliably measuring and interpreting outcomes in an uncontrolled environment.4,34,35 However the mixed-method evaluation of ActiveCity allows for the triangulation of data. This provides evidence for the perceived positive impact on individuals, as observed by individuals themselves and key stakeholders such as programme instructors, theoretically leading to community-wide benefit relevant to the health-promotion sector. We have shown qualitatively that ActiveCity can impact profoundly on individuals and result in significant changes in their level of physical activity, aiding improvements in physical and mental health and levels of social engagement. Quantitatively, results demonstrate that participation levels in walking remained constant over the years, while the proportion of people participating in moderate physical activity gradually declined. In contrast, levels of participation in vigorous physical activity were found to be significantly greater in 2012 and 2015 compared to 2008. The difference in vigorous physical activity observed between 2012 and 2015 can be attributed to a higher proportion of respondents aged over 45 years in 2015. Sufficient activity for health represents a combination of these three physical activity intensity levels. Although there is a significant decrease in moderate physical activity levels, and despite an older cohort of respondents in 2015, a statistically significant increase in the number of people engaging in sufficient physical activity for health was observed. In isolation these changes cannot be directly attributed to ActiveCity; however, when combined with the observation that those who were aware of ActiveCity were significantly more likely to be sufficiently active for health in 2012
and 2015 than those who were unaware of ActiveCity, a plausible relationship can be inferred. There was also an encouraging positive trend observed for those who had participated in an ActiveCity program and were sufficiently active for health, further strengthening this assertion. Future longitudinal and comparative research is required to confirm a causal relationship.

As we have discussed above, measuring and interpreting outcomes at a community level is challenging, and inherent limitations apply to this evaluation. As per all non-observatory research, this evaluation draws on self-reported responses and our telephone survey had a variance in the response rate throughout the evaluation period. The lack of a controlled environment and no parallel control group make attributing a causal relationship between the initiative and the population survey results challenging.31

Initiatives such as ActiveCity provide an opportunity to explore the elements of community-wide physical activity interventions that contribute to success.4 The longitudinal outcomes of participants and the development of social capital can also be explored through interventions such as ActiveCity. While they are not without challenges, establishing multifaceted partnerships to improve participation in physical activity is an effective option for governments, universities and the community sector. Our findings provide a rationale for implementing community-wide interventions that encourage and support people to increase their physical activity levels.

ACKNOWLEDGEMENTS

Dr Penny Allen, University of [State], and Dr Emily Moulden, University of [State] conducted the initial data analysis

FUNDING
This work was supported by the University of [State], the [City] City Council and the [State] State Government.
REFERENCES


15. Australian Sports Commission. Exercise, recreation and sport survey


20. Pettman T, McAllister M, Verity F, Magarey A, Dollman J, Tripptree M. Eat well be active community programs final report.


29. University of British Columbia. Okanagan Charter: an international charter for health promoting universites and colleges. 


APPENDIX 3 – Telephone survey questionnaire

Active Launceston November 2015

Good afternoon/evening,

This is .......... from the Tasmanian research company EMRS ringing as part of a project aimed at improving the health and wellbeing of the people of Launceston. The project is being co-ordinated by the University of Tasmania. We would like to ask you some questions that will help us get an idea of the current status of the community with respect to health. All answers are confidential to the research team which is bound by national privacy legislation.

Could I please speak to the youngest male over the age of 15 who is home at the moment?

IF NO MALE: Well then may I please speak to the youngest female aged 15 or over?

IF ASKED: The survey will take 10-15 minutes depending on your answers.

Q1. Is your age...

15-16 years ........ 1
20-24 years ........ 2
25-34 years ........ 3
35-44 years ........ 4
45-54 years ........ 5
55-64 years ........ 6
65-74 years ........ 7
75 years or over ... 8

Q2. During the last 12 months did you participate in any physical activities for exercise, recreation or sport?

By this I am excluding activities that are part of work, gardening or household chores.

Yes .... 1
No .... 2

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 9]
Q3. What is the MAIN physical activity you participated in during the last 12 months?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athletics/Running/Jogging</td>
<td>1</td>
</tr>
<tr>
<td>Badminton</td>
<td>2</td>
</tr>
<tr>
<td>Baseball</td>
<td>3</td>
</tr>
<tr>
<td>Basketball</td>
<td>4</td>
</tr>
<tr>
<td>Cricket</td>
<td>5</td>
</tr>
<tr>
<td>Cycling</td>
<td>6</td>
</tr>
<tr>
<td>Dancing</td>
<td>7</td>
</tr>
<tr>
<td>Gymnastics</td>
<td>8</td>
</tr>
<tr>
<td>Hockey</td>
<td>9</td>
</tr>
<tr>
<td>Ice Skating</td>
<td>10</td>
</tr>
<tr>
<td>Indoor Cricket</td>
<td>11</td>
</tr>
<tr>
<td>Indoor Soccer</td>
<td>12</td>
</tr>
<tr>
<td>Netball</td>
<td>13</td>
</tr>
<tr>
<td>Rowing</td>
<td>14</td>
</tr>
<tr>
<td>Rugby League</td>
<td>15</td>
</tr>
<tr>
<td>Rugby Union</td>
<td>16</td>
</tr>
<tr>
<td>Sailing</td>
<td>17</td>
</tr>
<tr>
<td>Skiing</td>
<td>18</td>
</tr>
<tr>
<td>Soccer</td>
<td>19</td>
</tr>
<tr>
<td>Softball</td>
<td>20</td>
</tr>
<tr>
<td>Squash</td>
<td>21</td>
</tr>
<tr>
<td>Surfing</td>
<td>22</td>
</tr>
<tr>
<td>Table Tennis</td>
<td>23</td>
</tr>
<tr>
<td>Touch Football</td>
<td>24</td>
</tr>
<tr>
<td>Triathlon</td>
<td>25</td>
</tr>
<tr>
<td>Volleyball</td>
<td>26</td>
</tr>
<tr>
<td>Water Polo</td>
<td>27</td>
</tr>
<tr>
<td>Water Skiing</td>
<td>28</td>
</tr>
<tr>
<td>Other (Specify)</td>
<td>29</td>
</tr>
<tr>
<td>Golf</td>
<td>30</td>
</tr>
<tr>
<td>AFL Football</td>
<td>31</td>
</tr>
<tr>
<td>Tennis</td>
<td>32</td>
</tr>
<tr>
<td>Swimming</td>
<td>33</td>
</tr>
<tr>
<td>Gymnastics/Aerobics</td>
<td>34</td>
</tr>
<tr>
<td>Lawn Bowls</td>
<td>35</td>
</tr>
<tr>
<td>Motorsports</td>
<td>36</td>
</tr>
<tr>
<td>Fishing</td>
<td>37</td>
</tr>
<tr>
<td>Martial Arts/Fencing</td>
<td>38</td>
</tr>
<tr>
<td>Pilates/Yoga/Tai Chi</td>
<td>39</td>
</tr>
<tr>
<td>Water Aerobics</td>
<td>40</td>
</tr>
<tr>
<td>Woodchopping/Hunting/Shooting</td>
<td>41</td>
</tr>
<tr>
<td>Horse Riding</td>
<td>42</td>
</tr>
<tr>
<td>Bush Walking/Rock Climbing/Orienteering</td>
<td>43</td>
</tr>
<tr>
<td>Ten Pin Bowling</td>
<td>44</td>
</tr>
<tr>
<td>Croquet</td>
<td>45</td>
</tr>
<tr>
<td>Boxing</td>
<td>46</td>
</tr>
<tr>
<td>Darts</td>
<td>47</td>
</tr>
<tr>
<td>Diving/Snorkeling</td>
<td>48</td>
</tr>
<tr>
<td>Kayaking</td>
<td>49</td>
</tr>
<tr>
<td>Skateboarding</td>
<td>50</td>
</tr>
<tr>
<td>Walking</td>
<td>51</td>
</tr>
<tr>
<td>Bovu Camp</td>
<td>52</td>
</tr>
<tr>
<td>Surf Life Saving</td>
<td>53</td>
</tr>
<tr>
<td>Caving</td>
<td>54</td>
</tr>
</tbody>
</table>

Q4. Was any of that activity organised by a club, association or other type of organisation?

Yes . 1
No . 2

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 6]
Q5. What types of club, or organisation organised the activity?

MULTIPLE RESPONSE
DO NOT READ OUT

Fitness, leisure centre requiring payment ........................................... 1
Sport or recreation club or association requiring payment of membership or fees for participation 2
Work .......................................................................................................... 3
School ........................................................................................................ 4
Active Launceston .................................................................................. 5
Other (Specify) ...................................................................................... 6

Q6. Including practice and training how many times did you participate in this activity in the last 12 months?

Number of times in last 12 months ........ ....

QUESTIONS 3 TO 6 REPEATED FOR EACH ACTIVITY THEY’VE PARTICIPATED IN DURING THE LAST 12 MONTHS

I should like to ask you about the THREE activities you have undertaken most frequently in the last 12 months.

Q7.1. How many sessions did you participate in the last TWO WEEKS?

[INSERT ANSWER TO Q4.1]

Number of Sessions .... ....

Q8.1. On AVERAGE, how long was each session during the 2-week period?

[INSERT ANSWER TO Q4.1]

RECORD IN MINUTES NOT HOURS

RECORD IN MINUTES .... ....

Q7.2. How many sessions did you participate in the last TWO WEEKS?

[INSERT ANSWER TO Q4.2]

Number of Sessions .... ....

Q8.2. On AVERAGE, how long was each session during the 2-week period?

[INSERT ANSWER TO Q4.2]

RECORD IN MINUTES NOT HOURS

RECORD IN MINUTES .... ....
Q7.3. How many sessions did you participate in the last TWO WEEKS?

[INSERT ANSWER TO Q4.3]

Number of Sessions .... _____

Q8.3. On AVERAGE, how long was each session during the 2-week period?

[INSERT ANSWER TO Q4.3]

RECORD IN MINUTES NOT HOURS

RECORD IN MINUTES .... _____

Q9. Compared with 12 months ago (that is from the current month last year) has the amount of time you have spent participating in exercise, recreation and sport increased, decreased or remained about the same?

Increased ........... 1
About the same .... 2
Decreased ........... 3
Unsure - PROBE .... 4

[IF THE ANSWER TO QUESTION 2 IS 2, THEN SKIP TO QUESTION 10]

Q10. In the LAST 2 WEEKS have you walked for sport, recreation or fitness?

Yes : 1
No : 2

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 13]

Q11. How many times did you walk for sport, recreation or fitness?

Record Number of Times .... _____

Q12. What was the TOTAL TIME you walked for during those 2 weeks?

RECORD IN MINUTES NOT HOURS.
RECORD TOTAL TIME NOT AVERAGE TIME.
PROBE IF THE TIME SOUNDS TOO LOW IN RELATION TO NUMBER OF SESSIONS.

RECORD IN MINUTES .... _____
I want to ask you firstly about MODERATE exercise and then about VIGOROUS exercise.

Q13. Not including walking; In the last 2 weeks did you do any exercise that caused a MODERATE increase in your heart rate or breathing; that is MODERATE exercise?

Yes  .  1
No    .  2

[F THE ANSWER IS 2, THEN SKIP TO QUESTION 10]

Q14. How many times did you undertake MODERATE exercise in the last 2 weeks?

Record Number of Times    .  ___

Q15. What was the TOTAL TIME you undertook MODERATE exercise in the last 2 weeks?

RECORD IN MINUTES NOT HOURS.
RECORD TOTAL TIME NOT AVERAGE TIME.
PROBE IF THE TIME SOUNDS TOO LOW IN RELATION TO NUMBER OF SESSIONS.

RECORD IN MINUTES    .   ___

Q16. Not including walking; In the last 2 weeks did you do any exercise that caused a large increase in your heart rate or breathing; that is VIGOROUS exercise?

Yes  .  1
No    .  2

[F THE ANSWER IS 2, THEN SKIP TO QUESTION 10]

Q17. How many times did you undertake VIGOROUS exercise in the last 2 weeks?

Record Number of Times    .  ___

Q18. What was the total time you undertook VIGOROUS exercise in the last 2 weeks?

RECORD IN MINUTES NOT HOURS.
RECORD TOTAL TIME NOT AVERAGE TIME.
PROBE IF THE TIME SOUNDS TOO LOW IN RELATION TO NUMBER OF SESSIONS.

RECORD IN MINUTES    .   ___
I would now like to ask you about walking for reasons other than for sport, recreation and fitness – this means walking you have done to get from place to place.

Q19. YESTERDAY did you do any walking from place to place for 10 minutes or more for reasons other than sport, recreation or fitness?

Yes ... 1
No ... 2

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 24]

Q20. How many times did you walk for 10 minutes or more yesterday?

Record Number of Times ...  

Q21. Apart from walking you did for sport, recreation or fitness, what was the total amount of time you spent walking yesterday?

RECORD IN MINUTES NOT HOURS

RECORD IN MINUTES  

Q22. Is the walking you did yesterday about the same as you do most days?

Yes ... 1
No ... 2

[IF THE ANSWER IS 1, THEN SKIP TO QUESTION 24]

Q23. Do you usually walk more or less than you did yesterday?

More ................................  1
Less ..................................  2
Unsure - DO NOT READ OUT ... 3

Q24. Do you smoke?

Yes ... 1
No ... 2

[IF THE ANSWER IS 2, THEN SKIP TO QUESTION 28]

Q25. On a scale of 0 to 7 how keen are you to stop smoking where 0 is "not keen at all" and 7 is "very keen"?

How keen are you to stop smoking?  

Q26. When you wake up every day, how soon is it before you smoke your first cigarette?

- More than 60 minutes … 1
- 31-60 minutes ………… 2
- 5-30 minutes ………….. 3
- Less than 5 minutes ….. 4
- It depends - PROBE ….. 5

Q27. How many cigarettes do you smoke in a typical day?

- 10 or less ………… 1
- 11-20 ……………… 2
- 21-30 ……………… 3
- More than 50 ……… 4

Q28. How often do you have a drink containing alcohol? Is it...

- Never …………………… 1
- No more than once a month … 2
- 2-4 times a month ………. 3
- 2-3 times a week ………… 4
- 4 or more times a week …… 5

[IF THE ANSWER IS 1, THEN SKIP TO QUESTION 31]

Q29. How many standard drinks do you have on a typical day when you are drinking?

DEFINE STANDARD DRINK FOR RESPONDENT

- 1 or 2 ………… 1
- 3 or 4 …………… 2
- 5 or 6 ………… 3
- 7 to 9 ………….. 4
- 10 or more ……… 5

Q30. How often would you have 6 or more standard drinks on one occasion?

- Never …………………… 1
- Less than monthly ….. 2
- Once a month …………. 3
- 2 or 3 times a month ….. 4
- Once a week …………… 5
- Daily or most days …… 6

This question is about your consumption of vegetables including fresh, frozen and tinned vegetables.

Q31. How many serves of vegetables do you usually eat each day?

- 1 serve or less ………… 1
- 2 serves ……………… 2
- 3 serves ……………… 3
- 4 serves ……………… 4
- 5 serves ……………… 5
- 6 or more serves …….. 6
- Don't eat vegetables .. 7
This question is about your consumption of fruit including fresh, frozen and tinned fruit.

Q32. How many serves of fruit do you usually eat each day?

1 serve or less ...... 1
2 serves ............... 2
3 serves ............... 3
4 serves ............... 4
5 serves ............... 5
0 or more serves ...... 0
Don’t eat fruit .......... 7

Some foods are referred to as “junk food” because they are not full of “good nutrition”. These may include deep fried foods, pastries, foods with little or no fruit or vegetables, foods high in salt, chocolates, lollies and crisps.

Q33. How many days of the week do you usually eat junk food?

1 day ................. 1
2 days ................. 2
3 days ................. 3
4 days ................. 4
5 days ................. 5
6 days ................. 6
7 days ................. 7
Don’t eat junk food .... 8

For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks.

34. Given this, would you agree or disagree with the statement “I currently engage in regular physical activity”?

IF AGREE/DISAGREE: Is that strongly or somewhat?

Strongly agree ................. 1
Somewhat agree ............... 2
Somewhat disagree ............ 3
Strongly disagree ............. 4
Unsure - DO NOT READ OUT . 5

Q35. Are you aware of the “Active Launceston” initiative?

Yes ...... 1
No ...... 2
Unsure ...... 3

[IF THE ANSWER IS 2-3, THEN SKIP TO QUESTION 38]

Q36. Have you ever participated in any Active Launceston activities?

Yes ...... 1
No ...... 2
Unsure ...... 3

[IF THE ANSWER IS 2-3, THEN SKIP TO QUESTION 38]
Q37. During the last 12 months, what is the TOTAL number of Active Launceston SESSIONS you participated in?

RECORD TOTAL NUMBER OF SESSIONS NOT TOTAL NUMBER OF ACTIVITIES
(E.G. ACTIVE BIKE IS THE ACTIVITY, BUT THEY PARTICIPATED IN A TOTAL OF 8 SESSIONS)

RECORD NUMBER OF SESSIONS .... _____

Q38. What is your height?

RECORD IN CENTIMETRES .... _____

Q39. What is your weight?

RECORD IN KILOGRAMS .... _____

Thank you for your helping us with this survey. Just to remind you that my name is ............... from the research company EMRS and that this survey has been conducted for the University of Tasmania.

Active Launceston is a community driven project aimed to improve the health and wellbeing of the Launceston community. To find out more about the project go to www.activelaunceston.com.au

If you have any questions about this survey you can call my supervisor at EMRS on 6211 1222 or Lucy Byrne at the University of Tasmania on 6324 4047.
APPENDIX 4 – Online survey

Active Launceston Survey 2012

Thankyou for completing this Active Launceston survey. It will take approximately 5 minutes.

Move more, live more with Active Launceston.

1. What is your gender?
   - Male
   - Female

2. What is your suburb?
   - St Leonards
   - Newstead
   - East Launceston
   - South Launceston
   - Youngtown
   - Summerhill
   - Prospect
   - Norwood
   - Launceston
   - Kings Meadows
   - West Launceston
   - Punchbowl
3. **How old are you?**
   - 0 - 15 years
   - 16 - 19 years
   - 20 - 24 years
   - 25 - 34 years
   - 35 - 44 years
   - 45 - 54 years
   - 55-64 years
   - 65-74 years
   - 75 years and over
4. **Which Active Launceston activities did you participate in? (tick as many as appropriate)**

- Active Parks
- Ride to Work Day
- Walk to Work Day
- Active Kids
- Active Garden
- Inveresk Park and Walk
- Sports Ability Hub
- GOLD - Growing Older Living Dangerously
- Active Bike
- Active Walk Run
- Active Launceston Expo
- Activate Your Life
- Active Aqua, Active Hydro or Active Swim (i.e. Active Aquatics)
- Active Workplaces
- Active and Alive
- Other

5. **Have you participated in any Active Launceston endorsed activities or been to any Active Launceston endorsed organisations? (tick as many as appropriate) These are activities that Active Launceston support and promote but don't actually fund or manage.**

- Swing Dancing
- Fit n Kicking
- Dance Fit
- UNIGYM
- PCYC
- Launceston City Council initiatives including, Active City Park, Ride Launceston, CRLA
- CHAT Pram Walking Groups
Heart Foundation Walking
Fernwood and Health and Fitness World
Wednesday Walkers
Leaning Church Vineyard
Active After School Communities
Launceston Mountain Bike Club Twilight Racing
Tamar Bicycle Users Group (TBUG)
Dragons Abreast Boat Paddling
Heals and Souls Dance World
Roller Derby
State Bike Week
Kelly Sports
Royal Park Croquet Club
Other
Comment:

500 characters left.

6. **How did you find out about the activities?**
   - Television
   - Radio
   - Newspaper
   - Poster/Flyer/Brochure
   - Mail Out
We are now going to ask you about your participation in physical activity. Physical activity or exercise includes activities such as walking briskly, jogging, bicycling, swimming, or any other activity in which the exertion is at least as intense as these activities (Adapted from Motivating People to be Physically Active, Marcus & Forsyth, 2003).

7. How would you describe your activity level?
   I currently engage in regular physical activity. (For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks.)
   - [ ] Strongly Agree
   - [ ] Agree
   - [ ] Undecided
   - [ ] Disagree
   - [ ] Strongly Disagree

8. I am currently at the following 'stage of change' in regards to my physical activity participation.
   - [ ] Stage 1: Not thinking about change (Precontemplation)
Stage 2: Thinking about change (Contemplation)
Stage 3: Doing some physical activity (Preparation)
Stage 4: Doing enough physical activity (Action)
Stage 5: Making physical activity a habit (Maintenance)

Comment:

500 characters left.

9. Active Launceston has encouraged me to participate in community based physical activity events and programs.
   - Strongly Agree
   - Agree
   - Undecided
   - Disagree
   - Strongly Disagree

10. **Due to my involvement with Active Launceston I have increased my level of physical activity.**
    - Strongly Agree
    - Agree
    - Undecided
    - Disagree
    - Strongly Disagree

11. I will continue to participate in physical activity at this increased level.
12. I think the Active Launceston activity was well managed and facilitated.

- Strongly Agree
- Agree
- Undecided
- Disagree
- Strongly Disagree

Comment:

500 characters left.

13. Being involved in the Active Launceston activity taught me more about the importance of physical activity to my health.

- Strongly Agree
- Agree
- Undecided
- Disagree
- Strongly Disagree
14. **Being involved in the Active Launceston activity taught me more about the opportunities available in our community to be physically active.**

- [ ] Strongly Agree
- [ ] Agree
- [ ] Undecided
- [ ] Disagree
- [ ] Strongly Disagree

15. **Because of my involvement in Active Launceston I have supported the following people to become more active.**

- [ ] Family Members
- [ ] Friends
- [ ] Work Colleagues
- [ ] Patients/Clients
- [ ] Other

Comment:

500 characters left.

16. **What have you valued most from being involved with Active Launceston**

- [ ] Opportunity to be physically active
- [ ] Trying a new activity
- [ ] Improving my health
- [ ] Meeting new friends
- [ ] Socialising
Finding out what physical activity opportunities are available in the community.

Becoming involved in the community

Learning a new skill

Participating in a safe and supportive environment

Other

Comment:

500 characters left.

17. Do you have any suggestions for improving the Active Launceston project?

350 characters left.

18. Do you have any other comments?

50 characters left.

Finish
Active Sports 2015

4TH – 28TH NOVEMBER
Wednesdays 6pm-7pm & Saturdays 9.30am-10.30am

Active Sports is designed for families and friends to try eight different sporting activities in a fun group environment. In 2015, Active Sports will run in two blocks.

For more information or bookings contact
Active Launceston: 6324 4027

Move More, Live More!

City of Launceston
Active Dance 2014

1ST MAY TO 19TH JUNE 2014

Thursdays 10.00am – 11.00am
Ravenswood Heights Primary School, Prossers Forest Road

Active Dance will teach you the basics of six dancing disciplines: Zumba®, Latin, Highland, Rock ‘n’ Roll, Ballroom & Modern Jazz. These sessions will help motivate you to get moving!

Join Active Launceston & start dancing to improve your health!

- FREE dance workshops
- Beginners welcome – designed for people with no or lots of experience who just want to have fun!

More information over page or contact Active Launceston on 6324 4027

Move More, Live More!
Active Kids 2013

City Park – meet our leaders at the rotunda! 25th Oct – 13th Dec (8 weeks) Every Friday!

Join Active Launceston for a FREE 45 minute ‘active play’ session for children of all ages and abilities; there is no better way to get children to increase their levels of physical activity participation! Active Kids will provide you with lots of ideas about how to get your kids active in the home, community or school.

2013 Active Kids Program

Friday Mornings (25th October – 13th December 2013)

<table>
<thead>
<tr>
<th>Time</th>
<th>Group</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.30am - 10.15am</td>
<td>Under 5s</td>
<td>Just turn up on the day and participate</td>
</tr>
<tr>
<td>10.30am - 11.15am</td>
<td>Primary &amp; Secondary, aged children</td>
<td>School bookings essential through Active Launceston (please see over)</td>
</tr>
</tbody>
</table>

Active Kids is NOT a babysitting service! It is essential that carers, parents and teachers join in the activities with the children.

For more information please contact Active Launceston on 6324 4027

Move More, Live More!
Active GOLD 2015

GOLD: GROWING OLDER AND LIVING DANGEROUSLY!

Experience the power of GOLD

Active GOLD is specifically designed for older adults to experience the numerous physical activity opportunities that are available in our community.

For more information or to register please call the GOLD Coordinator on 0428 311 213

Move More, Live More!
Looking for a parking alternative? Don't have enough time in your busy schedule to do any exercise? well Inveresk Park & Walk is for you!

Active Launceston provides 192 FREE SPACES at the roundhouse car park off Churchill Park Drive, Inveresk.

It is a 15 minute walk into the CBD via the Inveresk Spine – this is fully lit and you can even get a coffee on the way!

If you are keen for a longer walk, you can utilise the Inveresk Trail or take to the streets straight up Invermay Road, or if you are heading the other way, a 30 minute walk will take you up to Mowbray and 40 minutes each way to the University!

Inveresk Park and Walk is a great way to get your 30 minutes of physical activity a day that we all need to maintain good health.

The Active Launceston Inveresk Park and Walk car park will be open between 7am and 7pm every weekday (excluding public holidays) and the area will be covered by the precinct’s security team.

For more information please contact Active Launceston on 6324 4027
Active Launceston Expo
LAUNCESTON SILVERDOME
Wednesday the 28th of September 2011

Due to popular demand, the Active Launceston Expo in 2011 will have two session times:
1) 11:30am – 2:30pm; Schools, Workplaces, General Community and Community Groups
2) 5:00pm – 7:00pm; General Community and Families

Demonstrations, displays, activity sessions for everyone – it's a come and try day!
- FREE EVENT
- Heaps of family entertainment
- Gyms, fitness centres, sports clubs, street performers, dance groups, health promotion groups, activity centres – everything that is active in Launceston!
- Food and beverages available
- Heaps of discounts, freebies and giveaways

For any enquiries please contact
Active Launceston 011 6244 4027

Bring your active wear, sneakers and lots of energy because for this event you need to MOVE!

Active Launceston would like to thank Department Economic Development, Sport and Recreation Tasmania for their generous support of this event.

Move More, Live More with Active Launceston
Ride2Work Day is held annually to encourage new riders and infrequent riders to commute to work by bike. It also encourages regular riders to keep at it and encourage their work mates to get involved.

Benefits of riding to work:

1. **Improve your health! Get fit!**
   Riding to work feels great and reduces the risks of obesity, diabetes and heart disease.

2. **Save time!**
   Riding to work can give you some time back in your busy day.

3. **Save money!**
   Riding to work reduces costs associated with driving to work and/or catching public transport.

4. **Care for the environment!**
   Riding to work eliminates traffic and reduces greenhouse gas emissions.

5. **Increase your productivity!**
   Riding to work increases productivity as a result of improved fitness and mental health.

6. **Make commuting safer!**
   Riding to work promotes safety in numbers.

Three of Launceston’s largest employers: University of Tasmania, Launceston City Council and Launceston General Hospital go cycle to cycle to see which organisation has the most commuters riding 2 work on the 15th.

*To get your cycle on get:* a FREE bike safety check at participating stores: Cycleology, Geard Cycles, Bike Central, AvantiPlus and Cycle2.

ABC radio will cover the event which will finish with a FREE healthy breakfast in the city at the Northern Integrated Care Services building, Artrium (7.45am) and at the University of Tasmania, The Walk Cafe on Newnham campus (8.00am).

For more information on Ride2Work Day please contact Active Launceston on 6324 4027 or visit www.activeLaunceston.com.au

**Move More, Live More!**
Active Launceston has developed an innovative new program to promote gardening as a legitimate and very beneficial form of physical activity!

In partnership with the Northern Suburbs Community Centre and Conservation Volunteers, participants will be guided by an experienced Team Leader in Rocherlea’s Peace Garden.

Active Garden is a program of community-focused conservation activities, enabling and encouraging community members of all ages to get involved in regular physical activity.

The program will provide opportunities for people of varying fitness levels to undertake appropriate and regular physical activity outdoors whilst contributing to the environment.

10 am - 12 noon Thursdays 6th August - 29th October 2009

Sessions will be held every Thursday morning between 10 am and 12 noon.

Participants are not required to register, rather just turn up and participate and the program is totally FREE!

Please contact the Active Garden Team Leader for more information on 0409 188 435. For more information on Active Launceston visit the website www.activelaunceston.com.au

Move More, Live More with Active Launceston

This project was funded by the Federal Government Department of Health and Ageing.