Tai Chi

Preventing Falls,
Promoting Health,
Engaging Community:

EVALUATION REPORT OF THE PHYSICAL ACTIVITY LEADERS
NETWORK TAI CHI PROGRAM.

NSW GOVERNMENT Health

THE AUSTRALIAN NATIONAL UNIVERSITY
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SUGGESTED CITATION


This evaluation was undertaken in the NSW Health region known as GSAHS. This entity was changed as of 1st Jan 2011. For the purposes of this report the region will be called either ‘the former Greater Southern Area Health Service or the Area Health Services (AHS).
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This evaluation found that the Physical Activity Leader Network was an efficient and well-respected way of providing falls prevention to older adults in the former Greater Southern Area Health Service footprint, including remote and relatively underserved populations. The decision to utilise community volunteers has been critical to success for two reasons: it has resulted in a significantly lower unit cost than in comparable Tai Chi programs; and it has enabled the program to become embedded in the community, contributing to its growing sustainability and developing social capital. For a program of this nature to remain successful, it requires ongoing administrative support, and training and support for volunteer leaders.

Community uptake of this program is relatively high at 1.7% of the target population, and includes many people who are in frail health or at risk of falls. This evaluation has established a compelling body of qualitative evidence that participants acquire skills which improve balance, and make them less prone to falling, as well as experiencing a range of other benefits which improve quality of life for community dwelling elders. These include impacts on social isolation, confidence and anxiety.

Elements that appear to be associated with successful programs are: careful selection and support of leaders, particularly in the early stages of the program; advertising the range of benefits beyond arthritis through word of mouth; construction of groups that are welcoming of newcomers and include both genders; active identification and support of new leaders from within existing communities (especially from within classes); and addition of social networking activities to classes.

To optimise the success and value of the program and retain gains already made, the Area Health Service, through the Health Development Falls Team, should:

- Actively acknowledge and appreciate the work and community contribution of leaders through meaningful public recognition and continued support for networking activities among leaders.
- Develop a system for aligning organisational priorities and minimising internally generated resource waste and inefficiency, particularly when staff members have trained as TCA leaders, and provide staff with the flexibility to undertake leadership responsibilities as part of their work program.
- Continue to support ongoing training and administrative support for leaders, accepting that there is inbuilt attrition of leaders, and skilled volunteer programs need skilled and supportive administration. These costs should be regarded as investments in a very large program of volunteer engagement, broad ranging health outcomes and community development.
- Continue to support networking activities for leaders, and clarify with leaders the reciprocal obligations which exist.
- Collaborate with senior leaders to ensure that they are able to pass on their skills to novice leaders.
- Investigate further modes of recruitment with health care professionals and community, including changing the title of the program from “Tai Chi for Arthritis”, and ensuring high levels of program awareness among community based health & welfare agencies.
- Actively encourage men to become leaders to encourage more male participants to attend. Targeted promotion (for example, to GPs or barbers) may also be useful.
- Consider seeking formal feedback from leaders and participants who discontinue involvement.
- Continue to review policies ensuring the safety of participants, against the needs of those for whom the classes would be most beneficial.
- Consider mechanisms to assist participants achieve several hours of participation each week.
This report presents the findings of the evaluation of the former Greater Southern Area Health Service (GSAHS) Physical Activity Leaders Network between February 2007 and June 2010.

THE CHALLENGES
Falls are a significant problem in the elderly population with estimates that as many as a third of people aged over 65 fall each year. Both falls and fall related injuries are projected to rise as population age increases over the coming decades, foreshadowing substantial health system costs in terms of hospital admissions (more than any other injury related cause), and personal costs related to quality of life, health status and productivity for individuals and carers.

Reducing illness and death from falls related injury is a key injury prevention focus of NSW Health. In the former GSAHS this has been addressed partly through the establishment of a Physical Activity Leader Network (PALN) to facilitate the delivery of low cost ‘fall-safe’ physical activity options for older people in rural communities and areas of low population density.

The former GSAHS covers approximately one third of NSW, with a total population of 452,643 distributed over an area of 166,000 square kilometres. This creates significant geographic challenges for any population level intervention, compounded by social issues including a declining and ageing population, the impact of prolonged drought in mainly agricultural communities, and large pockets of social disadvantage.

The aims of this evaluation were to determine the suitability of the PALN model for providing a sustainable approach to delivering population based falls prevention interventions, and to increase knowledge of community wide health promotion approaches that can reduce fall–related hospitalisation rates in rural settings.

WHY TAI CHI?
Tai Chi is an ancient Chinese martial art consisting of a series of slow but continuous movements of many parts of the body. There is substantial and growing evidence to support the use of Tai Chi to prevent falls, including a Cochrane review that has shown that both the rate of falls and risk of falling can be reduced through group or home based exercise that includes two or more categories of activity challenge (e.g., balance, strength, flexibility, endurance).

Best practice recommendations developed in Australia have recommended group based Tai Chi as a way to deliver exercise to prevent falls in the community dwelling elderly, and noted that ongoing participation is likely to produce the most significant reduction in falls. At the same time, numerous other studies have reported additional diverse health and lifestyle benefits of Tai Chi.

WHAT IS THE PALN TCA PROGRAM?
This program was initially established as a two year, area wide strategy, and the network provides training and ongoing support to volunteers to establish and enhance the delivery of a range of physical activity exercise programs designed to improve balance and mobility. This report deals with the evaluation of the Tai Chi component of this network program, which relies on the use of volunteers who are trained and supported to provide weekly classes, on a not for profit basis.

The PALN employs the 12 step program known as Tai Chi for Arthritis® (TCA), developed by Dr Paul Lam. This program uses an adapted form of Sun-style Tai Chi exercise which has been shown to improve standing strength and balance, and heighten reaction time.

Volunteer leaders are provided with subsidised training and supported by an AHS Health Development Officer who is located within relative geographic proximity. In return they are contracted to provide a minimum of 40 weekly classes and comply with a series of program requirements.

EVALUATION APPROACH
Specific evaluation objectives focused on program process, impact and outcomes, with a particular emphasis on those issues that account for success and failure of the program in different settings. The evaluation was structured around the program logic model outlined in Chapter 2. Data were collected through secondary analysis of existing data, generation of new datasets specifically for the evaluation, mixed-method case studies and focus group analysis.

EVALUATION FINDINGS
In June 2010, 119 classes were operating in 49 sites throughout the former GSAHS region. Since the inception of the TCA program in 2007, classes have operated in up to 64 separate centres, but there has been some attrition with 15 of the original sites no longer offering classes. At the same time, 13 classes in 8 new sites have been added to the program in late 2009.
Participants
Participants are often surprisingly unwell with high rates of chronic illness, and are likely to derive substantial benefit from Tai Chi in terms of their risk profile. Men are under-represented among participants, proportional to population.

People start coming to Tai Chi because they anticipate physical benefits in terms of balance, mobility and exercise. They may be more likely to begin classes if they have existing social connections with class members or leaders. People keep coming to Tai Chi because they experience a range of physical, social and cognitive benefits which they find overwhelmingly positive. Falls and fear of falling are a relatively minor factor in participants’ motivation to join Tai Chi classes.

Adhering to Tai Chi practice at home is harder than practicing it in the class setting. This is mainly related to the complexity and knowledge of the moves.

Leaders
Leaders in the program are distinguished by their commitment, motivation, attitudes, initiative and skill. Leaders who are health professionals bring special skills and expertise which are advantageous but not critical to the success of the program. Leaders are frequently driven by altruism and derive rewards from intrinsic motivations and intangible outcomes. Leadership is challenging but rewarding, and enabling in its own right.

Most leaders honour their commitment against the contracted obligations, however leader attrition is an ongoing, inherent challenge for the program model. Succession planning is therefore a key element of sustainability. Leaders frequently manage succession planning themselves.

Volunteerism is the key determinant of this program’s reach and success. In excess of $350,000 of free labour is provided by volunteers each year. Training and network support provided by the former GSAHS is highly valued by leaders and participants. Volunteers currently feel recognised and appreciated within the program.

Inside a Class
Tai Chi is very safe. There have been no significant incidents in three years. Leaders largely follow the prescribed content and flow of the TCA program. However, experienced leaders are able to invent additional ways to promote the memory and attention of participants, and ensure safety. At the same time, risk management procedures are in place but documentation around these is often patchy and could be improved.

Program Administration
The key costs of the program relate to the provision of teaching and administrative resources to leaders. These are more than compensated for by the low unit costs of delivering the program. On current estimates, the unit cost is around $76 per participant per year.

Like any program that uses volunteers to deliver complex services, a substantial administrative load is an innate aspect of program delivery. That the Falls Team have created such a resilient and much-used initiative is testament to the commitment each member has shown to supporting leaders, and program delivery, through grassroots action.

The network is an important resource for leaders, and warrants continued fostering. There is also a need to promote the program actively to local GPs and other health providers, to encourage referral of more isolated, unwell members of the community.

One way to expand the uptake of the program among target groups may be to badge it as simply “Tai Chi” rather than “Tai Chi for Arthritis”.

Outcomes & Impact
Participants derive multiple benefits from TCA participation, which are not restricted to or necessarily focused on falls prevention. These benefits include improvements in physical function, psychological health and well-being, and social vigour, and are all relatively evenly distributed among the participant body. These benefits address a range of issues which pose challenges for the elderly and ageing population in rural communities. Participants are happy with the venues; however, securing suitable venues remains a significant challenge for organisers.
who participate in classes for more than six months have a small, but non-significant decrease in their one-year history of falls, compared to those who have joined within the last six months.

For individual participants, participation in the program mitigates against falls directly by improving balance, and indirectly through improving activity levels, reducing social isolation, and improving concentration. The program also generates social capital at the community level.

The effectiveness of the PALN cannot be measured by changes in hospitalization rates for falls, as these measures are subject to so much internal variation, and lack of sensitivity at a population level, that it is difficult to attribute any change to the program.

**IMPLICATIONS**

The disseminated and largely devolved nature of the TCA program is one of its strengths. It enables the program to be integrated into community, and for leaders to shape and modify their teaching in responsive but considered ways. There is emerging evidence that new leaders are starting to emerge from within the corpus of participants, often fostered by existing leaders, demonstrating the enabling nature of this program for communities. However, the distributed nature of this program requires skilled and consistent administration and support if GSAHS is to adequately manage issues such as risk and coherence of program delivery.

For a program of this nature to succeed, it needs ongoing administrative support at the level that currently exists, and ongoing training for leaders and support for their network. These are not costs that can be cut without emasculating the program. It may, however, be worth considering some kind of contribution from local government, since the program is now contributing to civic life - especially in smaller communities. Venue costs, for example, may well be something that could be subsidised or generated as an in-kind contribution by local government or other community partnerships.

Finally, the volunteer element of the program enables the program to be delivered cheaply and the program itself to be viewed as a community asset. Not least among its benefits is the fact that it configures the Area Health Service as an institution that cares about the community’s health. This model warrants showcasing as a health promotion activity that is helping to create a healthy and united community.

**RECOMMENDATIONS**

The Area Health Service should:

- Actively acknowledge and appreciate the work and community contribution of leaders through meaningful public recognition and continued support.

- Develop a system for aligning organizational priorities and minimising internally generated resource waste and inefficiency, particularly when staff members have trained as TCA leaders, and provide staff with the flexibility to undertake leadership responsibilities as part of their work.

- Continue to support ongoing training and administrative support for leaders, accepting that there is inbuilt attrition of leaders, and skilled volunteer programs need skilled and supportive administration. These costs should be regarded as investments in a very large program of volunteer engagement, broad ranging health outcomes and community development.

The Health Development Falls Team should:

- Continue to support activities and opportunities for networking among leaders, including links to local services and increasing local visibility.

- Clarify with leaders that they have a reciprocal obligation to GSAHS, and that furnishing data (especially in relation to risk) is a quid pro quo for being provided with liability insurance.

- Collaborate with senior leaders to ensure that they are able to pass on their skills to novice leaders.

- Investigate further modes of recruitment with health care professionals and community. One way may be to change the title of the program from “Tai Chi for Arthritis”. This would be more inclusive but still reach out to the target audience.

- Actively encourage men to become leaders to encourage more male participants to attend. Targeted promotion (for example, to GPs or barbers) may also be useful.

- Consider seeking formal feedback from leaders and participants who discontinue involvement, in order to clarify and address potential program issues.

- Continue to review policies ensuring the safety of participants, against the need those for whom the classes would be most beneficial. A pilot program in nursing homes led by a senior volunteer may be beneficial, along with training modules specifically for seated Tai Chi.

- Consider mechanisms to assist participants achieve several hours of participation each week, in line with current evidence for optimising effectiveness of Tai Chi interventions.
1. BACKGROUND

This report presents the findings of the evaluation of the former Greater Southern Area Health Service (GSAHS) Physical Activity Leader Network between February 2007 and June 2010. This evaluation, undertaken by the Rural Clinical School of the ANU Medical School was commissioned by the GSAHS Health Development Team and funded by the NSW Institute of Rural Clinical Services and Teaching.

STATE HEALTH CONTEXT

Reducing illness and death from falls related injury has been a key injury prevention focus of NSW Health over the last decade\(^1,2\). Prevention of falls among older people is a priority within the NSW State Health plan 2006-2010\(^3\), and the subject of a 2005 policy directive\(^4\) which requires mandatory compliance from all public health organisations in NSW. This obliges Area Health Services to implement strategies in line with the NSW Health Management Policy to Reduce Fall Injury Among Older People\(^5\) across the community, supported and acute care. The policy encompasses ten strategic goals under four key action areas: generating a low risk population; reducing fall injury among older people; improving outcomes through partnerships; and developing and managing knowledge.

GREATER SOUTHERN AREA HEALTH SERVICE FALLS PREVENTION ACTIVITY

A range of falls prevention activities are undertaken in the former GSAHS, including hospital and community health centre based programs which have achieved external recognition\(^6,7,8\). Community or population level programs fall under the remit of the Health Development Team, which is part of the Population Health Branch of the former GSAHS. The Health Development Team (HDT) is staffed by Health Development Officers (HDOs) and Program Coordinators whose roles are to “improve outcomes and health equity at a population level by influencing the social determinants of health and reorienting health and other services”\(^9\). The HDT works with external agencies to “create supportive environments for health behaviour change; improve health knowledge, attitudes and skills; socially market health messages; strengthen community action and develop healthy public policy”. The emphasis is on incorporating best practice in Health Promotion planning in order to develop, implement and evaluate programs with a strong evidence base and clear theoretical foundations. Current strategic priorities within the HDT follow those of NSW Health and target falls prevention, tobacco control and weight gain prevention\(^10\).

In 2007, the GSAHS Health Development Team established a Physical Activity Leader Network (PALN) to ensure the continuation of low cost fall safe physical activity options for older people in rural communities. The PALN program is funded by NSW Health and primarily informed by the Management Policy to Reduce Fall Injury Among Older People 2003 – 2005\(^6\). The program was initially established as a two year, area wide strategy, and the overarching program goal is to reduce fall injury among older people. The network provides training and ongoing support to volunteers to establish and enhance the delivery of a range of physical activity exercise programs designed to improve balance and mobility, on a not for profit basis\(^11\).

Physical activity programs designed to improve balance, strength, mobility, fitness and bone density have been identified as primary prevention strategies to reduce falls injury\(^12\). However access to exercise programs which target balance and provide ongoing exercise for older adults can be limited, particularly in smaller rural communities. Implementing evidence-based falls prevention initiatives in rural and regional populations is often complicated by inadequate or non-existent delivery systems\(^13\). Rurality, large geographic distances and limited exercise providers all present barriers to the availability of accessible, fall-safe activities. Supportive infrastructure to ensure sustainability and access to low cost classes within a reasonable geographic distance of where people live are important program design considerations in this context\(^12\).

The TCA program in the former GSAHS relies on the use of volunteers who are trained and supported to provide low cost fall-safe physical activity options for older people in rural areas, or those with low population density. Through the PALN, the former GSAHS HDT currently conducts leader training for two approved courses: Tai Chi for Arthritis and Community Exercise. This follows the earlier introduction of Tai Chi and ‘Heartmoves’ training in several centres within both the former Greater Murray and Southern Area Health Services under the auspices of the Rural Falls Injury Prevention Program\(^12\) between 2001 and 2004. The Tai Chi for Arthritis (TCA) program currently sits as part of a broader initiative which also includes the establishment of gentle community exercise programs. Community exercise activities were not included in the scope of this evaluation.

Details of the TCA model as part of the PALN, and its implementation, are provided in Chapter 2.
AN OVERVIEW OF THE LITERATURE

THE IMPACT OF FALLS

Falls are a significant problem in the elderly population with estimates that as many as a third of people aged over 65 fall each year, and fall related injury rates rising as age increases. Fall related hospitalisations accounted for 37% of all injury related hospitals in NSW between 2002 and 2005, and more than half of these were for adults aged 65 or over. 2002 projections by NSW Health predicted that bed demand due to fall related injury would continue to rise over the next 15 years and that falls showed the most rapidly rising trends in injury related hospitalisations, largely due to population aging effects. Much of the increase in falls related hospitalisations were predicted to occur in women aged over 65. In 2004, higher hospitalisation rates for falls were recorded in outer regional and remote areas.

The cost of falls related health care in NSW during 2006/7 was approximately $558.5 M, of which 84.5% was for hospital admissions. In 2003, this was more than any other injury related cause, and residents of aged care facilities (6% of the elderly population) account for a disproportionate amount of both medically treated falls (30%), and inpatient costs (21%). In addition to health system costs, falls also have personal costs in terms of quality of life, health status and productivity for individuals and carers. NSW Health in its management policy asserts that:

“fear of falling can be debilitating and lead to severe restrictions in activity and social interaction. The investment in fall injury prevention should be made with a view not only to managing health care costs, but improving the quality of life of older people, by reducing pain, fear and isolation and increasing independence and well being.”

INTERVENING TO REDUCE FALLS

While reducing falls in older adults has been shown to be a multi-factorial problem with a range of factors contributing to falls risk, there is substantial and growing evidence to support the use of Tai Chi to prevent falls. This evidence base has further developed since the introduction of the PALN / TCA program in 2007. A Cochrane review updated in 2009 has shown that both the rate of falls and risk of falling can be reduced through group or home based exercise that includes two or more categories of activity (e.g., balance, strength, flexibility, endurance, general physical activity). In this context, Tai Chi has been shown to be effective, as have exercising in supervised groups or undertaking individually prescribed exercise at home.

Exercise which challenges balance is the most effective form of exercise for preventing falls. It has been theorized that balance may be a critical factor in increased risk of falling as a person ages, and a potential element for intervention to reduce falls through physical activity interventions. High level balance training includes exercises conducted while standing in which participants are forced to: stand with their feet closer together or on one leg; minimise use of their hands to assist; and practise controlled movements of the body’s centre of mass. Sherrington and colleagues also note that there appears to be a dose-response effect with programs of at least 2 hours per week for at least 6 months producing a larger effect on fall rates.

TAI Chi AS A FALLS REDUCTION STRATEGY

Tai Chi is an ancient Chinese martial art consisting of a series of slow but continuous movements of many parts of the body. Tai Chi has been extensively tested for improving balance and preventing falls among older people, although some concerns have been raised regarding the rigour of methodological approaches. In particular, the safety and efficacy of ‘sun style’ Tai Chi has been demonstrated. Other forms of Tai Chi have been proven to be effective however, including “yang” style which emphasizes multidirectional weight shifting, awareness of body alignment, and multi segmental movement coordination. A randomised controlled trial conducted in central Sydney employed a range of styles with the majority of classes (83%) using sun style, two classes (3%) using yang style and a mixture of other styles (14%). The results indicated statistically significant differences in both falls, and five of six balance tests, favoring the Tai Chi group over the control group, but did not differentiate between Tai Chi styles. A study comparing Tai Chi with computer assisted balance training (gradual reduction of the base of standing support until single limb stance was achieved, increased body and trunk rotation, and reciprocal arm movements) found similarities between Tai Chi (TC) and balance training (BT) groups compared with educative controls but differentiated between TC and BT groups on measures predicting fall risk.

Best practice recommendations developed in Australia by Sherrington and colleagues have recommended group based Tai Chi as a way to deliver exercise to prevent falls in the community dwelling elderly, along with other group-based balance or specific home-based balance and strength training. They also propose that ongoing participation is likely to produce the most significant reduction in falls. The recommendations also describe intervention components of effective community based Tai Chi or exercise programs, but note that program design features (for example, location, recruitment strategy or target population) are less predictive of efficacy than program content (inclusion of balance training or exercise dose).
TAI CHI AND OTHER HEALTH BENEFITS

Numerous studies have reported additional diverse health and lifestyle benefits resulting from Tai Chi practice\(^{25,33}\), especially for those with chronic conditions. These include physiological and psychosocial elements\(^{34}\) such as reductions in chronic pain\(^{26}\), blood pressure\(^{35,36}\), and stress\(^{37}\); and increases in aerobic capacity\(^{34,38,39,40}\), strength\(^{35,41}\), immune capacity\(^{36}\), sleep quality, mental health\(^{35,36,43,44}\), physical functioning\(^{36,45}\), self-efficacy\(^{46}\), social support\(^{39,36,40}\) and overall quality of life\(^{40,47}\). Rogers et al\(^{36,40}\) and Yau\(^{38}\) further speculate that meditative forms of physical activity which involve mindfulness may allow forms of spiritual expression which contribute to successful ageing.

Some authors have raised methodological concerns about the quality of evidence available for review\(^{27,34,37}\). These may be, in part, an inherent feature of investigating Tai Chi as a complex multi-component intervention which does not lend itself to investigation by traditional research approaches\(^{38}\).

VOLUNTEERISM IN HEALTH PROGRAM IMPLEMENTATION

Over the last twenty years, there has been an international move towards greater use of volunteer labour in social services\(^{39}\). The benefits of this are twofold: services increase their capacity to deliver services; and volunteers themselves receive a “social dividend” resulting in an improved sense of engagement with the community, and – in some studies – improvements in mental health\(^{30,51}\). At the same time there has been increasing recognition that managing volunteer labour requires specific organisational strategies and approaches\(^{52}\). The evidence base around optimal ways to incorporate and support volunteers, and methods of accounting for the economics of organisational inputs and volunteer labour output are poorly developed. Only three countries (Australia, Belgium and Canada) conduct any national accounting of the work of volunteers. The tools for assessing the hours of input required, and the value of the labour and contribution to the organisation are poorly understood. In the absence of this, occasionally services find that volunteer labour may be more costly for an organisation than the benefits it provides.

From descriptive accounts of volunteerism across a range of non-profit sectors, it appears that the more complex and skilled the activity undertaken by the volunteer, the higher the needs for organisational support and training\(^{49}\). Volunteers are more likely to persist with organisations in which management has invested in building trust, cooperation and teamwork, and encourages achievement and a sense of shared values in the enterprise. This type of management has been called “management-by-partnership”\(^{53}\).

In contrast to the thin evidence base on effective management of volunteers, there has been a large body of work addressing the motivations of volunteers. Economists have suggested that volunteering is a “conscience good or activity” – something that people are more likely to undertake if requested to do so\(^{40}\). Furthermore, motivation crowding theory, for which there is some empirical evidence, suggests that under certain circumstances external motivations such as monetary incentives, may in fact reduce the intrinsic motivation of a volunteer\(^{34}\).

The PALN relies heavily on volunteer labour. The evidence on effective working with volunteers for a project such as this suggests that a successful program

- will require substantial investment and support from the organisation, as volunteers deliver teaching on a complex and sophisticated topic to people at risk of injury;
- will need to invest in developing an ethos of partnership between the organisation and leaders, and between the leaders themselves;
- will have incentives which are carefully calibrated so that they do not overwhelm the “civic virtue” obtained by being a volunteer leader; and
- will be more successful at recruiting new leaders if leaders are directly asked, rather than through relatively undirected ‘calls for interest’.

TAI CHI FOR ARTHRITIS®

The PALN employs the 12 step program known as Tai Chi for Arthritis (TCA), developed by Dr Paul Lam\(^{55}\). This program uses an adapted form of Sun-style Tai Chi exercise which has been shown to improve standing strength and balance, and heighten reaction time thereby reducing potential and actual falls\(^{39}\). Paul Lam is a Tai Chi Master and practising family physician based in Sydney. He has developed a series of Tai Chi programs including Tai Chi for Arthritis and Tai Chi for Diabetes, which are tailored to meet the needs of people with these chronic conditions, and can be safely practised. The TCA movements include moving forward and backwards and also bending the knees in wide steps. The cycle of movements is repeated to maintain a slow and continuous movement.

During the initial Rural Fall Injury Prevention Program (2005), six of the ten participating Area Health Services chose to train local leaders using the TCA program due to its accessibility, consistency with the evidence base, and availability of follow up and ongoing support\(^{17}\). Though marketed towards people with specific medical conditions, the Arthritis and Diabetes programs both
contain appropriate movements to protect against fall injury. During the subsequent transition to the PALN program in 2007, GSAHS again chose to utilize TCA after considering efficacy, simplicity and ease of use, training structure including the availability of graduated follow up training, and the availability of assessment criteria for leaders.

EVALUATION PROCESS & REPORT STRUCTURE

This external evaluation, focusing on the Tai Chi component of the PALN, was undertaken by the School of General Practice, Rural and Indigenous Health of the ANU Medical School during late 2009 and early 2010. This evaluation builds on and incorporates previous internal evaluations of the TCA program and acknowledges the substantial ongoing data collection effort and commitment of HDT staff. Its purpose is to inform decisions about the future resource allocation and supportive infrastructure dedicated to this program.

The aims of the evaluation process were to determine the suitability of the model for providing a sustainable approach to delivering population based falls prevention interventions, and to increase knowledge of community wide health promotion approaches that can reduce fall-related hospitalisation rates in rural settings. Specific evaluation objectives focused on the process, impact and outcomes of the program, with a particular emphasis on those issues that account for success or failure of the program in different settings. The evaluation methodology is detailed in Chapter 3.

The subsequent five chapters present the detailed findings of the evaluation, with Chapters 4-7 focusing on process matters. Chapter 4 outlines the characteristics of Tai Chi participants and their motivations for attending. Chapter 5 presents data about Tai Chi leaders and the processes they use. The mechanisms of a Tai Chi Class are detailed in Chapter 6. Program implementation and administration issues, and their implications for GSAHS staff are addressed in Chapter 7. Chapter 8 discusses outcomes of the program, and Chapter 9 deals with impact in terms of population indicators, and social and community capacity. Recommendations and conclusions are presented in Chapter 10.

“I FEEL LIKE WE ARE ALL ON A WONDERFUL JOURNEY OF LEARNING AND EXPLORING THE GENTLE ART OF TAI CHI. IT IS VERY REWARDING IN JUST A SHORT TIME TO SEE THE GROUP EMBRACE WITH EARNEST THE SLOW CONTINUOUS MOVEMENTS OF TAI CHI.”
- Leader, travelling story book
2. THE PALN TAI CHI PROGRAM

The Greater Southern Area Health Service (GSAHS) Physical Activity Leader’s Network (PALN) was established to contribute to the sustainability and accessibility of falls prevention activities in southern NSW. The network program began in 2007 with the objective of reducing fall injuries in older people and fall related admissions to hospital, by training and supporting community volunteers to establish and deliver fall-safe activities on a not-for-profit basis. For participants, the program focuses on improving the strength, balance, mobility, flexibility and bone density of people aged 55 years or over through Tai Chi and Gentle Exercise interventions.

The former GSAHS covers 39 Local Government Areas (LGAs) with a total population of 452,643 distributed over a geographic area of 166,000 square kilometres. The region covers a third of NSW and extends from the NSW South Coast across the Great Dividing Range and the Snowy Mountains through the south-west slopes, Riverina and Murrumbidgee regions and Murray border areas. Albury, Deniliquin, Goulburn, Griffith, Queanbeyan, and Wagga Wagga are the areas of highest population density. As the region is mostly rural, the main industry is agriculturally based. Significant social issues across the area include a declining and ageing population, especially inland, the economic and social impact of prolonged drought, and a growing aged community in coastal towns. There are also large pockets of social disadvantage, particularly in the west and the mountainous areas of the region. Based on 2008 Australian Bureau of Statistics (ABS) estimates, 66,100 men aged 55 years and over and 69,884 women aged 55 years and over live in the AHS area. Operationally, the AHS is divided into 3 clinical sectors around clusters of Local Government Areas. These are illustrated in Figure 2.1

TAI CHI CLASSES

The PALN Tai Chi Program centres on the provision of Tai Chi for Arthritis classes in various communities throughout the region, conducted by volunteer leaders, who form part of the PALN. This network, administered by the former GSAHS staff through the Health Development Team (HDT), provides training and ongoing support to volunteers to establish and sustain the delivery of classes in their local area, targeting community dwelling older people (55+ years) who are living independently and at low risk of falls, and those living in Residential Aged Care Facilities (RACFs) with low support needs. The stated program goal is to reduce fall injury among older people, with an additional aim of determining the suitability of this model of volunteer led, community based delivery for providing a sustainable approach to delivering population based falls prevention interventions. Program features which underpin the population health approach include the provision of classes in locally determined community settings, and an equity focus in program planning and development (see page 15). This ensures classes are placed in areas of high need (for example, small towns and communities), and promoted to population groups of interest including older people, Aboriginal and Torres Strait Islanders and low socio-economic groups.

LOCATION

At the time of this evaluation (June 2010, based on data to January 2010) 119 classes were operating in 49 sites throughout GSAHS. The distribution of current classes, and their relative size, is outlined in the map at Figure 2.1. The larger classes tend to be run in major regional centres or the retirement strip of the South Coast.
Since the inception of the TCA program in 2007, classes have operated in up to 64 separate centres, but there has been some attrition with 15 of the original sites no longer offering classes. At the same time, 13 classes in 8 new sites have been added to the program in late 2009. Some towns offer both beginners and advanced classes, with a small number of sites offering as many as 14 classes (per week).

The average number of classes per town is 2.4, with 21 sites offering a single class, 14 sites offering 2 classes, 6 sites offering 3 or 4 classes each, and 2 sites offering 14 classes.
VENUES & RISK MANAGEMENT

Class venues are chosen to be easily accessible by the community, although locating suitable venues at appropriate cost has sometimes been challenging. Typical Tai Chi class venues include community halls, local clubs, hospitals, and nursing homes. Risk assessments on venues are undertaken before classes start to ensure the safety of class participants, and any issues identified must be addressed prior to the commencement of classes. Classes are registered with the AHS before commencement for insurance coverage. Classes run on a non-profit basis, but gold coin donations are accepted from participants to offset leader costs and recognise their contribution.

Eligibility criteria apply to all participants and the class structure and activities are guided by templates and guidelines included in the Physical Activity Leader Kit. To be eligible, participants must reside in the community, be able to attend class without transport assistance, and be cognitively intact. Registration forms, including questions about falls history, risk and medical conditions are completed by participants prior to joining the Tai Chi class. This should alert the leader to participants at higher risk before the class begins, and participants identifying any problems are advised to consult with their general practitioner before participating in a Tai Chi class. Participants may also be referred by a health practitioner.

Leaders are required to formally report any incidents during class, as well as undertake ongoing risk assessments every six months to ensure classes meet best practice standards. An incident is considered to be any injury or event where medical treatment or first aid is sought, or any 'near miss' accident, which might alert program staff or participants to the risk of future adverse events.

TEACHING METHOD

Classes are conducted on a weekly basis for 45 to 60 minutes using the modified 12 movement Sun Style form of Tai Chi advocated by the Tai Chi for Arthritis program. The suggested instructional approach is the stepwise progressive teaching method 'watch me, follow me and show me' also adopted by Dr Paul Lam’s program. A class size of 10-12 participants is recommended for leaders who are classified as level one practitioners, although this may be increased for more experienced leaders. The class sessions include warm up and cool down exercises, and some classes also offer refreshments or socialising time after class. It is recommended that participants move between classes, or practise at home for at least one hour, to accumulate two hours or more of Tai Chi practice per week which is currently suggested by the falls prevention literature as the minimum time to achieve optimal gains from Tai Chi participation.

TAI CHI LEADERS

Tai Chi leaders in the PALN/TCA Program are trained by the AHS and supported by locally based Health Development Officers (HDOs), and through the PALN, to undertake their role. Leaders are initially recruited through existing classes and through advertisements in local newspapers, radio, flyers and posters targeting community members, AHS employees or staff of other community agencies. Although previous Tai Chi experience is not essential, suitable participants include: people who have group skills; health assistants; accredited exercise Instructors; Gentle Exercise leaders; Tai Chi teachers and advanced students; diversional therapists and activity therapists; community nurses; other health professionals; and registered volunteers who have experience with older people and exercise.

Many volunteer leaders are also AHS staff – often drawn from the allied health disciplines. The AHS provides leaders with public liability insurance cover when they register as a volunteer – including AHS staff or other agency staff who may wish to obtain AHS volunteer status to run a class out of work hours. Becoming a registered AHS volunteer involves completing a registration procedure, which includes the supply of referees, a criminal record check, and applying for an identification badge. AHS protocols related to volunteers include a standard code of practice, confidentiality agreement, and list of rights and responsibilities.

TRAINING

Training is formally provided through workshops led by accredited Tai Chi Master Trainers where they are familiarised with the TCA program designed by Dr Paul Lam. Two levels of training are provided. Level 1 is basic training that teaches class leaders the 12-movement forms (6 basic and 6 additional) based on Sun-Style Tai Chi. Level 2 training is more advanced and teaches leaders an additional 9 movements to create a repertoire of 23 movement forms. This supplementary training also enables leaders to update their teaching methods, and knowledge of Tai Chi.

Upon the completion of training leaders are accredited for two years. Training is subsidised by the AHS: leaders are asked to pay $50 for the initial two day training session, with all other costs borne by the AHS. To date, training has been offered on three occasions over the life of the program: Level 1, an Accreditation Update and Level 2 training were offered in August & September 2007; Update and Level 2 training in February 2008; and Level 1, Update and Level 2 training offered again in September 2009.
In addition to TCA training, leaders are expected to participate in CPR training and other relevant occupational health training when offered by the AHS (such as manual handling and security procedures). The AHS have so far offered first aid training in May 2010, and CPR and Advanced Life Support training at 4 of the 5 network meetings between 2008 and 2010.

OBLIGATIONS

Volunteer leaders in this program agree to: work without financial reward with respect to their involvement in TCA; undertake appropriate training and assessment, and participate in program delivery in accordance with this; run 40 Tai Chi classes over a 12 month period following their training; and make classes available to older people living in the community, ensuring they are run on a not for profit basis. Leaders sign a non-binding agreement with the AHS regarding their roles and responsibilities before Tai Chi classes begin.

Leaders are also required to compile and maintain records of class participation and attendance including participant registration forms, attendance sheets for each class and sequential risk assessment documents. In addition the AHS administers half-yearly telephone surveys of leaders in order to monitor and evaluate the development of classes and to ascertain support needs. These surveys collect information about the number of classes and participants, gender and age profiles.

SUPPORT

Each leader is individually supported by a Health Development Officer (HDO) employed by the AHS who lives within geographic reach. Each HDO is responsible for assisting leaders to set up and promote classes in the community, find venues, recruit participants, and to ensure they are complying with the procedures in the leader’s kit. The AHS provides a wide range of resources for leaders to set up and deliver classes. These resources include posters, brochures, business cards, exercise charts, newsletters, T-shirts, a leader’s kit, Tai Chi DVDs and books. The AHS also offers individual assistance, through HDOs, to access local information on OH&S issues, risk assessment, administrative support and consultation for any problems with participants or classes. Assistance for leaders is also available through site visits by local HDOs.

The AHS facilitates half yearly network meetings for leaders to discuss skill development, training needs, volunteering and program information, team work, problems and solutions. The meeting provides professional development, mentoring, support and motivation for leaders. It usually runs for at least four hours and includes a Tai Chi practice session. The PALN also uses two travelling story books as tools to share stories, ideas, best practice, lessons learned, and photos among leaders. These books enable leaders to connect and share information with each other.

ADMINISTERING THE PROGRAM

STAFFING

As a population level health intervention, and a volunteer support strategy, the program is administered by the Health Development Falls Team. This team has a Coordinator, plus a full-time equivalent cohort of 3.3 staff, made up of four individual HDOs who are geographically dispersed across the AHS and an Evaluation and Planning Coordinator. This group operationalises the network using a yearly business plan (Falls Prevention Team Work Plan), a regular schedule of teleconferences, and a yearly face to face meeting. Other Health Development Officers, also geographically dispersed across the AHS, assist with implementation. The HDOs assist in recruiting new leaders, organise Tai Chi training, and distribute newsletters. They are also required to provide quarterly reports to the Area Falls Coordinator about the level and type of support they have provided to leaders in their area.

PROGRAM PLANNING

During 2008 and 2009, prior to a round of leader recruitment, a process of mapping and identification of communities with higher need for physical activity falls prevention interventions was undertaken. This profiling included use of measures of social and economic disadvantage (SEIFA indices), measures of remoteness from services (ARIA indices) and measures of disadvantage. Ongoing selection of leaders, and therefore class sites, is based on equity considerations of geographic location, other available classes, and geographic or socio-demographic need for the class. To ensure classes are operating in area of need a series of factors are explored, including: identification of current leaders and geographical reach of existing classes; level of population engagement per LGA; falls hospitalisation data by LGA and relative comparisons with a state benchmark; and number of persons over 55 years in the proposed location. Other priority factors for program establishment are smaller or geographically isolated communities, low socio–economic status, and Aboriginal and Torres Strait Islander groups.

MONITORING

The reach and availability of classes is monitored on a six monthly basis through regular data collection processes and process evaluations of program components which inform program delivery. Six monthly telephone interviewing of network members also monitors: the reach of the Network; class activity, and participation by age group and venue; attrition of leaders after training; leader satisfaction with Network activities; and class and leader details. A quarterly quality activity is also conducted to ensure local program issues relating to support requirements, complaints, compliments and procedural compliance are identified and addressed.
3. EVALUATION METHODS

The evaluation was structured around the program logic model outlined in Chapter 2, using Stufflebeam’s CIPP model of evaluation\(^1\) (Table 3.1). Evaluation data were collected through secondary analysis of existing datasets, generation of new data items specifically for the evaluation, mixed-method case studies and focus group analysis (Table 3.2). The evaluation was approved by both the Human Research Ethics Committees of the Greater Southern Area Health Services and the Australian National University.

SECONDARY ANALYSIS
The major dataset for secondary analysis was the large database kept by the falls team since 2007, which contains: class location and details, records of training, volunteer status, occasions of support and venue risk assessment. Quality assurance surveys of leaders undertaken each quarter since 2007, and registration forms for participants, which include details of self-reported medical history, were also analysed. A further 10 questions essaying satisfaction with support, training and the network were added onto the most recent telephone survey for leaders (Appendix A). A spreadsheet outlining costs for several years of the program was also analysed.

PARTICIPANT SATISFACTION SURVEY
Participants were surveyed on their satisfaction with the program, recent history of falls, and their intentions, motivations and attitudes towards TCA, using the Attitudes to Falls-Related Interventions (AFRI) scale\(^2\). A 26 item questionnaire was constructed for this purpose (Appendix B). Cluster randomised sampling was used, with the class being the unit of randomisation. We distributed surveys through randomly selected leaders, each of whom undertook to deliver the survey to all their students. The estimated sample population required was 356, allowing for clustering. We received responses from 369 participants (Response Rate: 70%) from 29 classes.

ONLINE SURVEY OF TIME USE BY THE FALLS TEAM
An online survey collecting data on time use patterns in administering the program was completed by Falls Team members (Appendix C). This relied on self report and retrospective recall of activity.

CASE STUDIES
We undertook two ‘rapid appraisal’ visits to each of four sites. Each visit was conducted by two observers. One observer participated in the class, while another drew class configurations at six minute intervals, and took notes of interactions between participants (Appendix D). Afterwards, the observers then interviewed several participants and the leader about their experiences with the program (Appendix E). This process was repeated at a second visit, with interviews conducted with different interviewees. The observers also took photographs of the physical layout of the class. All interviews were transcribed and coded using NVivo software (QSR International).

FOCUS GROUP WITH FALLS TEAM
A focus group was conducted with Falls Team members exploring their individual and collective experiences with the program and the challenges of administering it (schedule at Appendix F).

OTHER DATA SOURCES
We transcribed and analysed the Travelling Tai Chi Story Books, the collective reflective scrapbooks in which leaders and participants enter accounts of their experiences with TCA. The Falls Team facilitates the movement of these journals between leaders, allowing the evolution of a community of practice. In many ways the journals function like a collective blog for regions with fragile access to the Internet. We also reviewed the media coverage of the falls program.
<table>
<thead>
<tr>
<th>EVALUATION QUESTIONS</th>
<th>METHODS</th>
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<tbody>
<tr>
<td><strong>CONTEXT</strong></td>
<td></td>
</tr>
<tr>
<td>• What is the social context of the program?</td>
<td>• Review of documents; Focus group with Falls Team</td>
</tr>
<tr>
<td>• What are background trends in falls rates in this region of NSW?</td>
<td>• Analysis of NSW Health data</td>
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<tr>
<td>• What are characteristics of the leaders in the PALN?</td>
<td></td>
</tr>
<tr>
<td>• What are the characteristics and motivations of participants in PALN?</td>
<td>• Secondary analysis of leader registration forms; Interviews with leaders</td>
</tr>
<tr>
<td>• What inputs are required by the Falls Team to administer the program</td>
<td>• Secondary analysis of participant registration forms, with application of risk matrix. Interviews with participants. Patient satisfaction surveys</td>
</tr>
<tr>
<td>• Is the program delivered to participants as intended?</td>
<td>• Survey of hours of administration by team and costs of program</td>
</tr>
<tr>
<td>• What are the risk management strategies of the leaders?</td>
<td>• Focus group with Falls Team</td>
</tr>
<tr>
<td>• What are the challenges for the Falls Team to support the PALN?</td>
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<tr>
<td>• How accessible and acceptable are venues?</td>
<td>• Participant observation of classes. Movement mapping. Interviews with leaders and participants.</td>
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<tr>
<td>• Is the network useful for leaders?</td>
<td>• Analysis of incident notification data and leader surveys</td>
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<tr>
<td>• What are the perceived benefits of the program for participants</td>
<td>• Focus group with Falls Team</td>
</tr>
<tr>
<td>• What is the attrition rate of volunteer leaders?</td>
<td>• Photographs of venues, patient satisfaction surveys, interviews.</td>
</tr>
<tr>
<td>• What is the participation rate of high risk and low risk participants?</td>
<td>• Interviews, analysis of travelling tai Chi network, leader surveys.</td>
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<tr>
<td>• Is there a reduction in falls among participants?</td>
<td></td>
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<tr>
<td>• Are participants satisfied with the program?</td>
<td></td>
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<tr>
<td>• Is the program sustainable?</td>
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<tr>
<td>• Is the program cost-effective?</td>
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<tr>
<td>• Are there other individual benefits to the program for participants?</td>
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<tr>
<td><strong>INPUT</strong></td>
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<tr>
<td>• Review of documents; Focus group with Falls Team</td>
<td></td>
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<tr>
<td>• Analysis of NSW Health data</td>
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<tr>
<td>• Secondary analysis of leader registration forms; Interviews with leaders</td>
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<tr>
<td>• Secondary analysis of participant registration forms, with application of risk matrix. Interviews with participants. Patient satisfaction surveys</td>
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<td>• Survey of hours of administration by team and costs of program</td>
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<tr>
<td>• Focus group with Falls Team</td>
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<tr>
<td>• Participant observation of classes. Movement mapping. Interviews with leaders</td>
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<tr>
<td>• Analysis of incident notification data and leader surveys</td>
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<td>• Focus group with Falls Team</td>
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<td>• Photographs of venues, patient satisfaction surveys, interviews.</td>
<td></td>
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<tr>
<td>• Interviews, analysis of travelling tai Chi network, leader surveys.</td>
<td></td>
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<tr>
<td>• Interviews; patient satisfaction survey</td>
<td></td>
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<tr>
<td>• Secondary analysis of six-monthly leader registration sheets</td>
<td></td>
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<tr>
<td>• Secondary analysis of registration forms</td>
<td></td>
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<tr>
<td>• Participant satisfaction survey</td>
<td></td>
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<tr>
<td>• Participant satisfaction survey, interviews</td>
<td></td>
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<tr>
<td>• Leader interviews, Focus group with Falls Team</td>
<td></td>
</tr>
<tr>
<td>• Calculation of volunteer hours, crude costing of program</td>
<td></td>
</tr>
<tr>
<td>• Interviews with participants</td>
<td></td>
</tr>
<tr>
<td>QUANTITATIVE DATA</td>
<td>DATE</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>--------------------------</td>
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<tr>
<td>Participant satisfaction surveys</td>
<td>June 2010</td>
</tr>
<tr>
<td>Leader surveys</td>
<td>February - July 2008</td>
</tr>
<tr>
<td></td>
<td>August 2008 - January 2009</td>
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<td></td>
<td>February 2009 - July 2009</td>
</tr>
<tr>
<td></td>
<td>August 2009 - February 2010*</td>
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<tr>
<td>Participant registration forms</td>
<td>Complete registration forms available for classes run by 9 leaders</td>
</tr>
<tr>
<td>Survey of falls team time use</td>
<td>March 2010 - April 2010</td>
</tr>
<tr>
<td>Estimate of costs</td>
<td>August 2006 - December 2009</td>
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<table>
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<tr>
<th>QUALITATIVE DATA</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Interviews with participants</td>
<td>October 2009 - April 2010</td>
<td>Collected for evaluation</td>
<td>n = 18 (2 men, 16 women); 4 towns</td>
</tr>
<tr>
<td>Interviews with leaders</td>
<td>October 2009 - April 2010</td>
<td>Collected for evaluation</td>
<td>n = 5; 4 towns</td>
</tr>
<tr>
<td>Observation of classes</td>
<td>October 2009 - April 2010</td>
<td>Collected for evaluation</td>
<td>8 hours of observations; 5 class locations, 4 towns</td>
</tr>
<tr>
<td>Photographs of venues</td>
<td>October 2009 - April 2010</td>
<td>Collected for evaluation</td>
<td>n = 56</td>
</tr>
<tr>
<td>Focus group with Falls team</td>
<td>February 2010</td>
<td>Collected for evaluation</td>
<td>n = 7; 98 minutes</td>
</tr>
<tr>
<td>Travelling Tai Chi story book</td>
<td>2007 - present</td>
<td>GSAHS resource</td>
<td>2 books; transcribed</td>
</tr>
</tbody>
</table>
4. TCA PARTICIPANTS: “THIS IS JUST RIGHT FOR ME”

At the time of this evaluation, 204 men and 1329 women were registered to participate in Tai Chi classes. Male participants tended to be older than female participants, with the mode for men occurring in the over 75 year age group, while the mode for women occurred in the 65-74 year age group.

![Figure 4.1 Age Distribution of Tai Chi Participants, 2009.](image)

TCA registration rates (standardised per 100,000 population) tend to increase with age, although there is relative under-representation (decrease) of women over 75 years in this cohort, and absolute under-representation of men across the entire cohort (Table 4.1). The population reach of the program is higher than the assumptions in models used to generate cost-effectiveness parameters for Tai Chi, with 1.7% of the population over 65 years undertaking Tai Chi.

<table>
<thead>
<tr>
<th>AGE GROUP (YRS)</th>
<th>AGE-SPECIFIC POPULATION PARTICIPATION RATE IN TAI CHI (PER 100 000)</th>
<th>OVERALL PERCENTAGE UNDERTAKING TAI CHI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEN</td>
<td>WOMEN</td>
</tr>
<tr>
<td>&lt;55</td>
<td>31</td>
<td>140</td>
</tr>
<tr>
<td>55-64</td>
<td>170</td>
<td>792</td>
</tr>
<tr>
<td>65-74</td>
<td>350</td>
<td>3570</td>
</tr>
<tr>
<td>&gt;75</td>
<td>1000</td>
<td>1950</td>
</tr>
<tr>
<td>TOTAL</td>
<td>140</td>
<td>850</td>
</tr>
</tbody>
</table>

Reference population: ABS for GSAHS catchment area
GENDER OF PARTICIPANTS: MISSING MEN

Interviewer: “Is there anything else you’d like to tell me that I haven’t asked about?”

Participant: “You can tell me how I can get my husband to come. I’ve been trying ever since I came down and he won’t. Just… men. (laughter).” [Participant L, Site 3]

Women outnumber men among Tai Chi participants by a factor of six. If the proportion of men and women attending reflected the population over 55 years overall, the numbers of men and women would be equal. In an analysis of the relationship between gender of the leader and gender of participants, for the six month period August 2009-February 2010, the female: male ratio among participants was significantly lower in classes led by men (4.1:1, compared with 9.3:1 for classes led by women; chi square analysis for relationship between gender of leader and participant; p = 0.0004).

Some women confirmed the male preference for a male leader:

“You know the thing was because it was out in the open air and I knew where it was here, I was able to get Don to come. Now he wouldn’t have come to a hall with a lot of ladies in it… So that was the real benefit of coming out, plus it was a man that was doing it. So Don got really, really keen on it. As you know he’s done the course and everything, which is really good.” [Participant C, site 1, name changed]

When observing the classes we found many men maintaining a distance and observing rather than participating – especially at the outdoor venue which provided greater latitude for this to occur. There is no evidence that female participants are uncomfortable when men attend or contribute to the reluctance of men to ‘join in’. Many women recognize the relative absence of men and are keen to increase participation by their husbands – as demonstrated by the quotes above.

The under-representation of men in the classes may have a compounding effect; that is, men may be even less likely to attend classes that are predominantly composed of women. Several more experienced leaders noted that men tend to maintain a ‘low profile’ in classes due to the gender weighting in favour of women:

“I have found over the years, that in a mixed class, the men generally want to work at the back of the group, and no matter how often we change the class around they always ‘drift’ back to the rear, I guess because they are in a minority they are a bit shy! We are just thankful to have some gentlemen still working to perfect their form after several years.” [Leader, travelling story book]

HEALTH STATUS OF PARTICIPANTS: THE BURDEN OF ADVANCING AGE

Overall, participants tended to be quite unwell, and to have a number of risk factors for falls. An evidence-based composite risk factor assessment tool was constructed and applied to the 246 participants for whom complete data on medical conditions were available. The maximum score possible with this tool was 9.1.

The highest risk factor score among the participants was 5. Only nine per cent had no risk factors (Figure 4.2). Forty-three per cent had three or more risk factors. There were no overall gender differences in this analysis. Advanced age automatically accorded participants one risk factor point; but among these oldest patients, many were quite active and did not have co-existing illnesses.

The most common risk factor for falls among participants was chronic illness (215/246; 87%). 48% reported being afraid of falling, and this was the only risk factor with significant gender differences (18% of male participants and 42% of women reported a fear of falling; chi square = 9.67; p = 0.002). The least-reported risk factor was taking psychotropic medications (only 4/246; 1.6%). Participants were surveyed regarding the number and name of their medications. 42% reported being on at least one medication (median 2 medications; range 1,10). Polypharmacy (defined as over six medications) applied in only 2% of cases.

*See appendix G for details on how this tool was constructed.
A number of interviewees, including leaders, described quite significant health issues which impacted on their day to day functioning.

“…at the start of this year, I had to be resuscitated on the beach. I had no pulse and I wasn’t breathing. I’m afraid to say that I am not as healthy now as when I started, and my whole right side I have a burning sensation through it, especially in the leg. And my right foot has also given up. However, I’m convinced that if it wasn’t for my Tai Chi and my Yoga I wouldn’t be here now. So overall, I think the very fact that I’m still around is due to the Tai Chi and the Yoga.” [Leader T]

“I suffered a stroke, it’s been eight years ago now, and I was sort of withdrawn and I couldn’t move on my left side, I couldn’t coordinate or anything like that, so that was the reason I joined. I was finding it hard to coordinate the brain. I felt like I forgot that I had this left side and trying to get it get involved with my body. I do have difficulty while I’m in class because I have certain disabilities and I’ve got to try and overcome them, that’s the whole reason of why I come.” [Participant F, Site 2]

Despite this, many also report that TCA is an inclusive and enabling form of activity, well suited to their health status and ability. In the following excerpt, a participant first demonstrated how her illness had limited the movement of an upper limb, then described how she felt TCA classes would include someone with her level of disability and encourage her to retain her movement.

“All the things that I’ve had, and I can still do this, you know? [moving arm] It’s a nice steady flow. See I can’t lift my arm up very high. But that doesn’t worry me. This one’s fine. You know? So it’s good. I would be embarrassed if I had to go to a proper class - not a proper class, that sounds bad - to a class where they are a bit heavier. I couldn’t take that. This is just right for me.” [Participant D, Site 1]

Many interviewees reflected on changes in health status over the time they have participated in TCA. These were mostly related to functional limitations and abilities, and had a profound effect on participants’ perceptions of self and their day-to-day ability to participate in the activities of daily life.

FALLS & FEAR OF FALLING: MAKING ALLOWANCES

Only 16% of participants surveyed (57) had experienced a fall in the past 12 months, and of these only 18 (5%) described their fall as serious. 5% of respondents described themselves as very afraid of falling. This is consistent with the qualitative data which suggests that falls and fear of falling are not a major factor for many participants, although they are recognised as a risk of ageing. The following quote is typical among the participants who had experienced a fall and reflected on their propensity to fall again:

“You don’t have the same balance as you do when you’re younger. And so you make allowances for yourself. I think you have to. If you don’t you’re silly, and I think all old people, older people need to be very careful where they put their feet, and how they put their feet down. One
thing that Tai Chi teaches you is what to do with your feet and how to move and be steady on your feet.”

[Participant C, Site 1]

WHY PARTICIPATE IN TAI CHI?

There tend to be two referral pathways for participants:
- self-referral (these people often describe aspirational motives or are looking for something to do); and
- referral by health professionals (these participants tend to be more disabled but are not always so).

Across these groups, there seem to be certain motivators for initially attending Tai Chi, and often different motivators for continuing to attend.

MOTIVATION: GETTING GOING

Participants referred by health professionals are often referred for the wider benefits of Tai Chi, rather than exclusively for its impact on arthritis. One participant, for example, was referred to TCA by her psychiatrist to help her to become more confident with people. For self-referrers, social connections and word of mouth appear to act as attractors. Some participants knew each other before starting Tai Chi – they report coming along to support each other or because they know people. Some attend with their spouse, or with a friend. In one site, a square dancing group started attending because one of the members began leading classes. Local media, especially newspaper and radio, seem to be other good mechanisms for attracting people.

At registration, the majority of people cited balance and mobility as the main reason for joining (Table 4.4) Seventeen per cent of registrants expected a cognitive benefit – either relaxation or improved concentration. Benefits that were unlikely to be realised through Tai Chi participation (fitness, weight loss) were mentioned by 17% of respondents. There were no gender differences in reasons for joining. During interviews, many participants refer to age-related changes in life circumstances: the impact of disease, or changes in family structures or spousal relationships, or retirement, for example.

Some participants describe looking for an activity to fill a space and time void in their life, in addition to providing exercise benefits. Other participants describe a life that is quite full, often with caring duties. For these participants, Tai Chi seemed to be a strategy for retaining control over their future, ensuring they don’t become frail when they ‘have no time for it’.

“And the girls say to me, ‘Mum you’re always running around.’ And I said, yeah: I’m running around after you, I’m running around after Dad. And I said, ‘I’ve got to keep on exercising because I said if I don’t… I can’t get around, what are you going to do then? Get taxis for everything you want?’”

[Participant N, site 4]

<table>
<thead>
<tr>
<th>REASON FOR JOINING TCA CLASS*</th>
<th>NUMBER (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve balance and mobility</td>
<td>144 (65.4)</td>
</tr>
<tr>
<td>Achieve fitness</td>
<td>34 (15.4)</td>
</tr>
<tr>
<td>Improve relaxation</td>
<td>34 (15.4)</td>
</tr>
<tr>
<td>Achieve better pain control</td>
<td>30 (13.6)</td>
</tr>
<tr>
<td>Undertake exercise</td>
<td>28 (12.7)</td>
</tr>
<tr>
<td>Social outlet/have fun</td>
<td>13 (5.9)</td>
</tr>
<tr>
<td>Improve concentration</td>
<td>5 (2.3)</td>
</tr>
</tbody>
</table>

*more than one reason could be cited
**MOTIVATION: KEEPING GOING**

Motivators for continuing attendance tend to be weighted more towards the lived experience of participation. Interviewees spoke about the value of the mindfulness experience, feeling good and ‘forgetting your other life’ for a while; doing something that is ‘good for you’; and the ‘just rightness’ of Tai Chi for their situation in spite of physical or other limitations. The accessibility (especially local availability and cost), acceptability and ‘doability’ of Tai Chi are important considerations for this target group and make TCA stand out among other forms of physical activity.

“As you get older you’re physically unable to do the really energetic activities. In a lot of instances you haven’t got your driving licence or you’ve lost your car for some reason or other and you can’t get to places. So the fact that Doreen* comes over here, just to teach the few that she does, I think is just wonderful. This is why I wish we had a few more people that would come. Tai Chi is… anybody can do it. Even if you’re in a wheelchair, you can do your upper body with Tai Chi and that helps.” [Participant L, site 3, *name changed]

In other cases participation created social opportunities which became a motivator for continuing attendance. One indicator of attitudes towards Tai Chi is the large number of participants who described Tai Chi as a social good which they wished to share with others.

“But I like to come every week because I always find it loosens your body up and that. I’ve been trying to talk one of my daughters into coming along. She’s not well, but she won’t come along. And I said to her look, it’s really good for you. And then, you know, you meet up with all these women that are there and you know it’s just a nice morning out.” [Participant N, site 4]

There was a clear perception among participants that the AHS is doing something useful and valuable by providing TCA classes, responding to this broad array of needs in an innovative way.

“I think probably because it’s now available to them and it doesn’t cost a lot of money, people do like to get out and about and oh, let’s give it a go. Find that they like it, that they meet people, that everybody’s very pleasant. There’s no pressure, and it’s good for your health. And I think it’s amazing. I think it’s just the most amazing thing, and I think [Greater Southern Area Health] should be really congratulated for putting this on. I think it’s really great.” [Participant C, site 1]

**ATTITUDES & INTENTIONS: IT’S A GOOD THING**

Participant surveys conducted in February 2010 (n = 386) probed participants’ attitudes and intentions regarding Tai Chi participation (Table 4.3). The majority of participants expressed highly positive attitudes towards participation. The most variable factor was the relative ease of participation; the fact that people expressed such strong intent to continue even when for many it was not the easiest of activities speaks strongly for the quality of the leaders and the intervention itself. There were no significant gender differences between responses: the mean total male score was 39.3 (SD 3.61) and the mean total female score was 36.6 (SD 3.93).

**TABLE 4.3 PARTICIPANT ATTITUDES TO PARTICIPATION IN TAI CHI**

<table>
<thead>
<tr>
<th>ELEMENT TESTED</th>
<th>QUESTION</th>
<th>MEAN (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes</td>
<td>Continuing to do Tai Chi will be good for me</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continuing to do Tai Chi will make me confident</td>
<td>6.20 (0.98)</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>Other people who’s opinion matters to me think it is a good idea for me to do Tai Chi</td>
<td>6.18 (1.05)</td>
</tr>
<tr>
<td>Perceived behavioural control</td>
<td>It is easy for me to do Tai Chi</td>
<td>5.81 (1.17)</td>
</tr>
<tr>
<td>Identity</td>
<td>I am kind of person who should do Tai Chi</td>
<td>6.22 (0.88)</td>
</tr>
<tr>
<td>Intention</td>
<td>I intend to continue to do Tai Chi if I am offered the opportunity</td>
<td>6.52 (0.71)</td>
</tr>
<tr>
<td>Mean total score</td>
<td></td>
<td>37.59 (3.89)</td>
</tr>
</tbody>
</table>

(0 = strong disagreement; 7 = strong agreement)
WHAT DOES PARTICIPATION LOOK LIKE?
71% of participants surveyed in February 2010 were relatively experienced class members who had been attending for six months or more. Only 15% had been participating for one month or less, and 14% for between two and six months.

ATTENDANCE PATTERNS: MORE IS BETTER
Most participants describe attending class weekly. Most participants are highly committed to attendance often stemming from their positive experiences, and have quite pragmatic reasons for non-attendance.

“Yeah, I can’t be two places at once, so that’s the only reason I miss it, otherwise I go all the time……..Unless I’m sick or something, like I can’t go, that’s just common sense, otherwise I go all the time, it motivates me. [Participant F, site 2]

The main barriers to attendance are travel or absence from home, and illness. While it might be reasonable to assume that seasonal variations play some role in affecting attendance through these mechanisms, this is not supported by the available data. In one case study site, where an open air venue was used, participants also acknowledged that weather would be a potential barrier, however this did not appear to have been a major problem so far. Participants and leaders spoke of continuing the classes during inclement weather around the picnic shelters by the beach.

The response and intervention of leaders can be an important enabler in overcoming factors which might otherwise limit attendance for participants.

“Sometimes individual members feel they will have to give up the class because of a particular difficulty. Because Gillian is a physiotherapist she is able to find a solution to the problem and the person is able to continue in the class.” [Participant, travelling story book, name changed]

Based on an analysis of sequential attendance data from four classes in two sites, attendance rates average around 50% (Table 4.4). It should be noted that only limited data were available for inclusion in this analysis, and these data were in some classes incomplete.

In some centres where there are additional classes, including advanced and beginner level classes, there are people who attend more than once per week. In the qualitative data, the major determinant of whether or not people attend more than one class appears to be the availability of classes. In the sites outlined in table 4.4 above, three participants in site AB attended both classes. Of these, one often attended both classes in a single week, whereas the other two seemed to move between the classes which were held at different times on the same day. These three participants had composite attendance rates of 26%, 74% and 119% (25 classes in a 21 week period) respectively. 22 of 23 participants in the advanced class in site XY had moved up from the beginner class. There was commonly a transitional period of 6-8 weeks where participants moved back and forwards between classes but usually only attended one or other class each week.

<table>
<thead>
<tr>
<th>CLASS</th>
<th>TOTAL PARTICIPANTS</th>
<th>MEAN ATTENDANCE RATE</th>
<th>SD</th>
<th>MIN</th>
<th>MAX</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB1</td>
<td>27</td>
<td>52%</td>
<td>0.319</td>
<td>6%</td>
<td>100%</td>
<td>25 weeks §</td>
</tr>
<tr>
<td>AB2</td>
<td>47</td>
<td>49%</td>
<td>0.338</td>
<td>0%</td>
<td>100%</td>
<td>21 weeks §</td>
</tr>
<tr>
<td>XY1¥</td>
<td>39</td>
<td>37%</td>
<td>0.244</td>
<td>4%</td>
<td>100%</td>
<td>33 weeks §</td>
</tr>
<tr>
<td>XY2</td>
<td>23</td>
<td>51%</td>
<td>0.32</td>
<td>5%</td>
<td>100%</td>
<td>19 weeks §</td>
</tr>
</tbody>
</table>

§ not consecutive weeks ¥ Class XY1 is a beginner class feeding into class XY2, so attendance rates reflect a decline as participants move to the advanced class
ADHERENCE AT HOME: A GOOD IDEA BUT HARD TO DO

Most participants have an awareness that they should try to extend their Tai Chi practice at home. Many do, although many also have good intentions but don’t get around to it. The frequency of home practice varies between daily and weekly for various amounts of time, and nothing at all. Issues with home practice seem mainly related to a lack of time or competing priorities, and difficulties with remembering the movements or sequences without a leader to follow.

"I try to do it every morning when I first get up…Sometimes things happen that I can’t do it straight away, but if I don’t do it first thing in the morning before I start other jobs, I get tangled up and it gets around that I haven’t had any time. You know what it is? A retired person is so busy." [Participant L, Site 3]

Physically being present in the class, with other people to follow, is an important enabler of continued practice for many people who find the concentration required, and complexity of the movements, daunting at home on their own. This is consistent with other quantitative and qualitative data that suggest a major challenge in continued practice is this physical difficulty.

"You know, you can see some of the girls they can just go ahead on their own. They say they practise at home. I said, well look, when I go home I forget how to do it. I said I just need that leader there. And when I’ve got the leader, yes, not a problem and go ahead with her, but on my own I can’t." [Participant N, site 4]

WHY DO PARTICIPANTS STOP ATTENDING?

During interviews a small number of leaders and participants allude to a ‘drop out component’, in which people discontinue attendance. There is a difficulty in clearly establishing why this is the case as there is no real mechanism for contacting or following up these individuals. The following comment from a leader illustrates her efforts to engage with these people and determine what factors might be contributing:

"We’ve had a number of people drop out of the class, I suppose like anything. And I try and make an effort to ring those people and have a bit of a chat to them, and ask them why they can’t come to the class……I mean, there are people who can’t come because there’s a time factor. It doesn’t fit in with something else that they want to do. Sometimes they just find it a little bit challenging and they can’t remember all the moves, and they get a little bit frustrated with their lack of progress…… Other people have had reasons like [they] didn’t like how big the class was getting." [Leader U]

This quote sums up the potential reasons that leaders and participants advanced to describe the reasons for discontinuation among participants. Some were intrinsic to Tai Chi (movements were too hard or not hard enough); some to the “fit” between Tai Chi and the person, and some related to structural issues (scheduling of classes, changes in class composition or size). In the following quote from the participant survey, a respondent who was dissatisfied with the Tai Chi classes reflects dissatisfaction with the content material.

“I am not happy that leaders can only teach Tai Chi. This is not suitable for all and some have given up going. The Tai Chi after 15 minutes I lost concentration and if I do it for an hour leaves me frustrated. I know quite a few other people feel the same way. Of those you will not hear from as they have dropped out. I would very much like to see the previous gentle exercises returned to help other people” [Ex-participant, participant survey].

The variation in these responses highlights the personal nature of participants’ engagement with Tai Chi, and suggests that it would be impossible to establish a structure which was ideally suited to all potential participants.

“Quite a few people dropped out. You know: “It’s not me”, or they just couldn’t concentrate, it was all a bit too – and I’ve noticed a few others came and they were a lot younger ones. Then they only came twice or something. It was obviously not what they thought it was going to be. Too slow. Tai Chi, it’s fairly slow. Just for the older ones, you know. If you come and you see we’re all old, well… I don’t know how old the youngest one would be but I mean, average out, we’re all placed in our seventies. … Youngest one might be fifty.” [Participant O, Site 4]

Some participants raised a concern that there might be a community perception that Tai Chi is too “alternative” or that the title “Tai Chi for Arthritis” might act as a disincentive for people who perceive that they don’t have arthritis.

IS THE PROGRAM REACHING THE TARGET GROUP?

Although many of the participants are physically more frail than the “ideal” target participant, there was still some concern among both leaders and participants that the current program structure tends to attract more able-bodied participants who are less at risk of falling. The question was raised about whether the emphasis on an enabling ‘get up and go’ type of approach tends to attract mobile people who are looking for places to go and things to do, and inadvertently by-passes those at greatest fall risk – who might tend to stay at home and be at risk averse. This is compounded by the risk management approach of the AHS which demands that people be ambulatory and able to ‘self-propel’ to a class. This concept of the “ideal
participant” was supported by some participants who felt that people are more likely to attend if they are already motivated to be active:

Interviewer: “So do you think that Tai Chi tends to attract the people who want to be active and move anyway?”

Interviewee: “Yes…….Yes, I do. Because, you know, people can make excuses. Oh, no, I didn’t feel well, and I didn’t do that. And I say to them, well I don’t care what I’ve got to do. I always try to keep Tuesday morning for that, because I said I just can’t afford not to be active. (Laughter).” [Participant N, site 4]

The opposite view was expressed by participants in a RACF based class, where the concern was about their relative lack of ability to attract a larger group. While the reservations about RACFs are largely related to the perceived limited efficacy of modified Tai Chi, conducting seated classes is in fact a common occurrence observed in most community classes in this evaluation (see Chapter 6). Seated Tai Chi exercises are not covered in the general course content of the TCA training provided by the AHS. However Paul Lam has recently released a new TCA DVD for seated exercises. It may be beneficial to provide this to leaders – both those running classes in RACFs and those conducting community classes - to ensure and improve the standard of seated exercises being offered.

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**SUMMARY**

- Men are under-represented among participants, proportional to population.
- Participants are often surprisingly unwell with high rates of chronic illness, and are likely to derive substantial benefit from Tai Chi in terms of their risk profile.
- Falls and fear of falling are a relatively minor in participants’ motivation to join Tai Chi classes.
- People start coming to Tai Chi because they perceive that it has likely physical benefits in terms of balance, mobility and exercise. Social connections linked to the class may facilitate commencement.
- People keep coming to Tai Chi because they experience a range of physical, social and cognitive benefits which they find overwhelmingly positive.
- Adhering to Tai Chi practice at home is harder than doing it in the class setting. This is mainly related to the complexity and knowledge of the moves.
WHO ARE THE PALN / TCA LEADERS?
There are currently a little over 100 Tai Chi leaders in the region, approximately three-quarters of whom are community volunteers. The volunteers are distinguished by their energy, diversity of background (from yoga teachers to retired farmers) and by their commitment to passing on a knowledge which they value highly. Some of the first volunteers had already trained in Tai Chi or yoga prior to the establishment of the PALN. This is an important aspect of the success of this program, as these people were able to act as culture-brokers for their participants. The second generation of volunteers has often learned their Tai Chi solely from the leaders in the PALN. The remaining quarter of Tai Chi leaders are employees of the AHS. This group seems to be similar to the volunteer cohort in their enthusiasm and commitment, but they are younger and more physically fit than the volunteer cohort. The median number of classes run by leaders is 2 (maximum = 9 classes for one leader) (Figure 5.1).

In 2008 and 2009, leaders contributed approximately 7620 hours of direct teaching time to the TCA program. Including those classes where the leader has a co-teacher, we estimate that approximately 4000 hours of direct teaching time is provided through this program per year. At an estimated $110 per hour for a trained Tai Chi teacher, this amounts to $419,100 worth of teaching provided through this program per year. Of this, teaching hours to the equivalent of approximately $350,000 per annum are provided through volunteer labour.

Leaders are more likely to be female (female:male ratio, 6.8:1). The mean age of male and female leaders is 58.4 and 51.8 years respectively. More than half the leaders had significant medical illnesses requiring medication, mostly cardiac in nature. Overall, women leaders tended to be slightly healthier, reflecting the influence of a number of younger women in this cohort (Figure 5.2).
WHAT MAKES A GOOD LEADER?

Participants rate the skill and knowledge of Tai Chi leaders very highly (Figure 5.3) and interview data from both leaders and participants provide useful insights into the factors which contribute to this.
**MOTIVATION TO TEACH**

Leaders made the following comments in response to the question “what motivates you to keep running [classes]?”

“The outcomes from the class. I’ve seen lots of different positive effects on many different individuals who’ve come through the class. And I think it’s having a real impact on our community here, so I find that it’s quite valuable. I enjoy the company of all the people here. I think it works both ways. I look forward to seeing my ‘oldies’ every week, you know, as I refer to them.” [Leader U]

“Probably seeing the benefits that other people are getting and seeing the social networking that goes on. ……Yes, the confidence to get out from their homes, to be more confident moving, to be able to do more, and their social skills improve………They get out more; they enjoy meeting with people and talking to one another and sharing their lives.” [Leader V]

“Not only to benefit myself but the keenness of my students. They are all willing to get up and learn something new, and especially with the new nine [moves] - they were so willing to do that. After coming back from Pambula in July this year where we have got the new and improved program, they picked it up beautifully.” [Leader W]

Motivation thus hinges on the class themselves, the prospect of improved health outcomes and the support provided by the PALN network. Leaders expressed appreciation for the ‘opportunity’ to lead Tai Chi and saw this as an added benefit they derive from their own participation.

“I’d just like to say thank you very much for this opportunity of being a leader………It is great. It has made an improvement in my life and I can see it makes an improvement in people in my class.” [Leader W]

“It has been a real pleasure to work beside such committed and knowledgeable community members. I feel privileged to be a part of this network and to support and nurture the growth of such a valuable initiative. Well done Naomi* and well done leaders you are an inspiration to us all.” [Leader, travelling story book, name changed*]

**COMMITMENT TO THE PROGRAM**

Leaders generally cited a personal commitment to Tai Chi philosophy and practice as useful, but not essential. Another factor raised by program staff, but less supported by our observations and other data, is the notion of ‘compliance’ by leaders with the program approach. This is defined loosely as whether or not leaders meet ‘expectations’ of ‘how it should be done’. Examples of failures of compliance were: allowing participants to undertake Tai Chi while sitting down, not being sufficiently ‘structured’, or doing the movements ‘too quickly’.

Program staff emphasise this technical skill or proficiency somewhat more than participants who, on the other hand, seem to especially value patience and perseverance on the part of leaders.

“She’s a good leader, she’s got a lot of patience and she doesn’t mind how many times you go over a movement. She’ll explain it, she never loses her patience, she’s really tops. She goes to every training class that she can and so she’s always coming back with new ideas, slightly different movements and different ways of teaching and it’s exciting and it’s a challenge.” [Participant L, site 3]

Leaders who are seen as knowledgeable and accommodating inspire confidence and comfort.

“But while I’m in the class I don’t have trouble. I’m not worried because, I don’t know why, I just feel…. I just feel comfortable here. I think I know that Angela* will probably know what to do if I do, we haven’t had any incidents so it’s been good. That’s the whole point you know, we are very careful and she takes us in right procedure and makes sure everybody’s safe and feel confident.” [Participant F, site 2]

The most valued leaders seem to create an environment of both social and physical safety through the application of this skill set. Based on our limited qualitative data, it seems that participants also particularly value the leaders who are allied health professionals. There is an element of this dynamic that works for both health professionals (who see it as a way of extending their therapeutic role and fulfilling their health promotion obligations at a community level) and for clients (who respond positively to the pastoral and caring nature of this therapeutic relationship).

**ATTITUDES OF THE LEADER**

Of the five leaders we interviewed, most expressed a ‘big picture’ view of what is valuable about their work – a belief in the worth of the program or Tai Chi itself, a desire to contribute to their community, or at least a pastoral orientation towards their participants.

“I have learned to be able to zone out those distractions so that I’m focused purely on what we’re doing at that particular time, and focusing on what the participants are doing as well. The distractions aren’t a distraction to me because I’m there for the class and that’s what we’re doing.” [Leader V]

For many, the class group itself has become something to be nurtured and developed. This is evidenced by comments about sustainability, developing new leaders, making sure groups are not ‘left in the lurch’, and using potential sources of revenue (weekly donations or the Government stimulus package, or even incurring potential
personal cost) to enhance class interactions. Most of these leaders tend to view Tai Chi as something which enables them to be active contributors to their community, rather than something which they need to be active in order to do.

“I went for a parachute jump on my 80th birthday and I think being so positive up here [in the class] helped me think positive all the time. I don’t know, it’s just, ........ you’ve got to concentrate, believe in what you’re doing.” [Leader G]

Class members are particularly attuned to the ‘sort of person’ a leader is and some leaders take on a significance that is disproportionate to their role as an exercise instructor alone.

“Angela’s ‘ the main thing, she’s a beautiful person, she just sits there and she listens to you, you know, nothing’s a problem and that’s what people need to have someone to talk to. Like you don’t have to go into nitty-gritty detail or anything, she’s just caring.” [Participant F, site 2, name changed*]

This may be a function of the psychosocial space that people occupy at a later stage in their lives, where meaningful interpersonal interactions are more elusive for some, and mobility and access to activities becomes limited.

WHAT HAPPENS TO LEADERS?

ATTRITION

Leader attrition is an in-built reality of this program. Most volunteers proceed after training to run classes; less than one in every 20 volunteers trained failed to establish classes (primary attrition). However leaders often do not continue for extended periods of time (secondary attrition). Figure 5.4 demonstrates the secondary attrition for the leader cohort running classes in the May-August 2008 period, over the next 2 years. At the end of this period, less than half the original cohort of Tai Chi teachers were active.
For community volunteers, primary attrition seems to reflect lack of confidence in getting a class started and loss of momentum following training. Program staff suggest that the longer this is delayed, the harder it seems to be. The logistics of getting a group off the ground can be daunting, especially if initial interest is limited and numbers are small. In some centres, classes have been overwhelmed early but this seems to be the exception rather than the rule. Having some kind of backup support during this phase may be pivotal for volunteers although no guarantee of success. It may be worth seeking feedback formally from leaders who did not continue to illuminate issues here as this group were beyond the scope of this evaluation.

Volunteers are slightly more likely to withdraw from teaching than AHS employees. The main reason for attrition was a change of work circumstances or moving town, with nearly half of volunteers who ceased running programs citing these reasons. This was more common among younger volunteers, and reflects the overarching imperatives of rural employment markets. The attrition of leaders who were also AHS employees was a source of frustration for the program staff, who seemed to have limited power to effect a solution. In the following quote the respondent opines that there is more attrition among AHS staff than among volunteers. This belief – not supported by the quantitative data – may indicate a greater expectation of contribution from staff leaders than from volunteer leaders.

“I would say on the whole we probably have more volunteers who have done the training and delivered on the classes than staff members who have done the training and then found out through their manager that they’re not going to be released to do the classes. We really don’t have a very competent mechanism at the moment to go back to managers where we’ve trained AHS staff and they haven’t put in classes. We just get absolutely furious about the waste of resource. That really needed to be addressed at a higher level, because they’re wasting everybody’s time.” [Focus group participant]

For leaders who are AHS staff, difficulties with program establishment seem to be related to conflicting priorities, change management and availability rather than isolation, support and confidence. Utilising AHS staff as Tai Chi leaders increases the cost of the program – if only because of the opportunity costs involved. This may be at the root of some of the barriers around management directives and staff not being released to capitalize on training.

Because of the built in attrition, there is an inevitable need for the pool of leaders to be regularly replenished. Because leaders overall are neither healthy nor young, the program would be at risk without a commitment to making it sustainable, through recruitment of assistant leaders who might replace the first leader.
Figure 5.5 demonstrates the total number of leaders from different cohorts. It can be seen that there is a steady diminution in leader numbers over four quarters. The program staff reflected on this finding:

“I think at the end of two years people were fatigued. We asked them for 40 weeks which is basically 12 months worth of work, a lot of people extended that to two years, however at two years they were getting tired, the retention rate… people either – and that’s when we offered the second round of training, people were really quite keen to either renew, or go. So there was fatigue.” [Focus group participant]

This figure shows how the training session offered at the end of two years resulted in an influx of leaders sufficient to continue running the program.

**SUCCESSION PLANNING**

Succession planning by volunteers appears to have arisen as an instinctive response to sustainability issues.

“You can see and hear when people are more interested, and that’s when I got different people like Harry* to lead, so in other words show me. And there were three people. One lady’s leaving the area so she couldn’t take the training, but two did take the training. And I’m always on the lookout to see if anybody might have that potential to lead, and then you know, persevere with the groups, different days.” [Leader T, name changed*]

Among the interviewees, several leaders had been participants first. In the observations, it was also clear that class members instinctively watch particularly adept members of the group, possibly an adjunct mechanism for identifying potential leaders.

This may in fact be a very effective way to seed leadership potential and minimize recruitment failures. Preliminary data suggest that second generation leaders have lower primary attrition rates compared to the initial establishment phase of the program (see Figure 5.3). This makes sense from a theoretical perspective, as volunteers in general are more likely to participate when asked to by people in their immediate social circle, to whom they feel a moral responsibility. If asked by outsiders, or if they volunteered with an abstract notion of “providing service”, volunteers’ commitment is likely to be less firm. This analysis suggests that stable and established Tai Chi groups can become a source of continued leaders for their own groups.

In contrast to the AHS leaders (one of whom described being told to start training as a leader on the first day of her work with the AHS), volunteer accounts about their trajectory into leadership were often modest and underplayed the commitment and effort required to undertake this role.

“Well, I just sort of got wrapped up in it you know, and [the initial leader] is going and we had a big class here, up to 30 sometimes, and I thought well, I’ll give it a go and if I can pass the test fair enough, I can’t well, I thought my age might be against me a little bit but they didn’t seem to think so. So yeah I passed everything over there, I did the course and when I take the classes here everyone seems to be happy with the way I run them.” [Leader G]

**WHAT IT MEANS TO BE A LEADER**

**THE CHALLENGES OF LEADING**

Most leaders pragmatically describe this work in terms of service for others. A recurring feature of their comments was the statement that leaders felt a vicarious resilience through the program, feeling stronger and more enabled as their (often highly disabled) participants became stronger. Nevertheless, the requirements of continued leadership can be onerous.

“Here in [Town A], the initial challenge that we faced was the overwhelming and unanticipated response to our modest promotion for the upcoming programme. Where we’d hope we might be able to muster enough local interest to commence a class with 12-15 participants, we ended up with over 80 participant applications!” [Leader, Travelling Story Book]

“Getting towards the end of the first year, I wondered do I really need to do this? Do I really need to come out every Wednesday? There was only me at that stage. I was the only one leading.” [Leader T]

Several leaders commented that the requirements to set up a class, including the paperwork and reporting, were onerous for a non-professional. In the following account, a leader contrasts some of the positive experiences of others with her own slow progress in establishing the program.

“I began by advertising via posters at the local shop and word of mouth. Everything looked very positive. Everybody I spoke to was keen and couldn’t wait to start. On registration day 2 people turned up. I was not deterred I continued advertising and vocalizing the benefits and the “cheap” price but I still only had 2 people. So we began. As these people are our neighbours we did not need to get acquainted. One man and one woman. They had tried dancing lessons some years ago but the teacher gave up telling them to try a different activity. As I had not taught this kind of activity before my confidence soared - downhill.” [Leader, Travelling Story Book]
The leader in this town also undertook a class in a RACF for patients with dementia. Both classes proved to be challenging for different reasons, and the leader describes drawing on personal resources and the sense of achievement in the progress of her participants to continue running classes. In this case, however, the leader did stop after one year of teaching.

“With all these trials and tribulations I have not lost heart and I have found that the best thing in every circumstance is laughing at our own mistakes. Even laughter has its health benefits.” [Leader, Travelling Story Book]

**TRAINING LEADERS**

The provision of leader training is one of the major ongoing functions of the PALN in maintaining the program. Even for established leaders, the refresher type events are important. “Training” is one of the social goods offered to leaders in exchange for their volunteer labour, and in general this is very well-received by leaders. As a result the cost burden for the AHS around leader training is unavoidable and a key program component.

Participant A: “I guess if I was to give them advice I’d say is to think about resourcing it as it should be resourced… …….I think spend the time and the money on the training because if the wheels start to fall off a little bit and you haven’t got someone right next door or upstairs, who can advise you…..”

Participant B: “Well that’s exactly what we found with community exercise….. the training wasn’t up to scratch and we had a mass exodus of leaders.”

Participant A: “… so maybe spend a bit more time and money on the training side maybe, have it as an extra day and or maybe have some sort of follow up, professional sort of follow up…… sooner rather than later because I think you might be able to avoid some of the issues that I’ve seen come up with leaders not teaching the right stuff.” [Focus group participants]

Ongoing training also contributes to sustainability by maintaining momentum among leaders.

“I think also the level of [their training], if the leaders have been retrained and they’ve got that new step, like the new [31], that will keep people there as well, because if it’s two years on and they’re still doing the first 12 moves, some people do get bored with it. So if they have been retrained, that keeps people going as well.” [Focus Group Participant]

Program staff generally feel that the training offered is effective and acceptable to participants, and leaders also describe it very positively (Figure 5.6). They still feel positive about the opportunities for further education, though 15% felt these were average or below average. The program charges a small payment for leaders to attend training ($50) which seems to be about generating a perception of value and commitment. Program staff expressed uncertainty about whether this cost was a barrier, but those for whom it is may exclude themselves from the program. None of the leaders we interviewed expressed concerns about cost or being asked to make a financial contribution. It seems clear that resourcing training adequately is an important and continuing component of sustaining the program.
SUPPORTING LEADERS

There is considerable variation in the level and type of ongoing support required by leaders. This variability in support needs is a dilemma for program management and creates structural challenges at an administrative level. This may mean accepting that mixed messages from the leader group are a part of program reality. Leaders were generally positive about the support offered by the AHS, with the exception of networking, where many would have liked more in their area (Table 5.1).

A large proportion (40.6%) had not attended a meeting in the period August 2009 – February 2010, but those that did felt positive about the experience. The individual activities of the network were assessed as of variable worth, with face to face meetings and the appointment of senior Tai Chi leaders being regarded very positively.

Network participation is valued for the access it provides to peers, information and advice, and the stimulus to maintain motivation and inject variety so the program does not become stale.

“Oh, I think it’s an advantage to be part of the network, and to have people who you can get in touch with. And also to be notified of the professional training……..I think anything that’s done needs to have some stimulus input occasionally, some change. In a department store they have a change of music, or a change of lighting, or change the shelves around. There needs to be some stimulus, I think, to keep the whole situation fresh and appealing.” [Leader T]

An important source of informal support for leaders is from participants themselves – who in some cases state that they attend to ‘support’ leaders. There is a reciprocal relationship here that is synergistic and dynamic and seems related to the warmth that infuses the way people talk about the program. In most of the observation sites it’s clear that this caring works in both directions.

“My participants are such warm, caring, adorable people who are injecting so much energy into the class that it is making my role very simple. I am a physiotherapist and I have found that this program offers so much for such a wide variety of conditions.” [Leader U]

There are also some examples of ad hoc support from other health service staff, for example, hospital administrative staff. Linking leaders in to local, on the ground, health service configurations more strongly or consistently may be advantageous, rather than the current sense that they are part of the health development group but may be less visible to local services. This strategy may also be another way of generating recruitment momentum in that it raises their profile with potential referral sources, such as GPs, and maximizes awareness in the minds of people such as reception staff who are the ‘face’ of the health service.

Several leaders mentioned having a co-leader or helper was a tremendous support. This kind of ad hoc, site specific support is one of the program strengths but also a challenge in terms of being able to systematically arrange for it at an administrative level.

### TABLE 5.1 LEADERS’ ASSESSMENT OF NETWORK SUPPORT

<table>
<thead>
<tr>
<th>RESOURCE PROVIDED</th>
<th>POOR (%)</th>
<th>VERY GOOD TO EXCELLENT (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to network resources</td>
<td>5.6</td>
<td>60</td>
</tr>
<tr>
<td>Support to establish classes</td>
<td>7</td>
<td>42.8</td>
</tr>
<tr>
<td>Assistance with risk assessment</td>
<td>2.4</td>
<td>50.1</td>
</tr>
<tr>
<td>Networking with other leaders in the same</td>
<td>13.3</td>
<td>34.7</td>
</tr>
<tr>
<td>Network meetings</td>
<td>2.3</td>
<td>40.5</td>
</tr>
<tr>
<td>Newsletter</td>
<td>1.3</td>
<td>36.5</td>
</tr>
<tr>
<td>Overall level of satisfaction</td>
<td>0</td>
<td>46.6</td>
</tr>
</tbody>
</table>

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Several leaders mentioned having a co-leader or helper was a tremendous support. This kind of ad hoc, site specific support is one of the program strengths but also a challenge in terms of being able to systematically arrange for it at an administrative level.
“Well, by training up another gentleman just recently that has made my job a heap easier because the class is rather large as you can see. He’s made my job probably a little… a lot easier because I can leave him to work with a group while I go and work with another group. And I know that they’re going to be well supervised and cared for. So from an OH&S point of view, and incident reporting, that’s a good thing.” [Leader U]

...AND THE VALUE OF RECOGNITION

There is a perception on the part of program staff that volunteers have cachet and community standing as a result of their leader status. This is probably accurate up to a point, although leaders rarely articulate it. Leaders do describe the pleasure and positive reinforcement they derive from their role, but these tend to be about direct affirmation and feedback from class participants and feeling they are contributing to the community rather than status. Most leader narratives imply a sense of ‘journey’ and learning rather than arrival, elitism or superiority. They tend to see themselves as being with or alongside participants rather than above or in front of them.

Although leaders are not motivated by status, the status of leaders is something for the AHS to support, as it appears to act as an important way of ensuring commitment to the program. Participants accord status to their leaders, whether or not the leaders seek it. Participants know that Tai Chi movements are difficult to learn, and leaders are viewed with respect as holders of an advanced body of knowledge. For the leaders in the case studies, the quasi-professional aspect of their work (training, and regular meetings of the network) instantiates the worth of the enterprise. There is also the opportunity for personal (career) development within the program (from participant to leader to advanced master) and this contributes to a professionalization of the program’s volunteer workforce, although completion of this trajectory would involve personal cost.2

2 These advanced training levels, while broadly available, are not currently offered or subsidised by GSAHS

“We offer level one training which is training for two years, and then we offer a level two training which is up to [31] moves, so they have the time to actually develop their Tai Chi skills personally, and if they wanted to they could go on to [73 form] and then they could go on to their master trainers. So you really have a way that they can proceed with the Tai Chi if they really love it. And a lot of people have taken the idea to go to [31] moves, and sometimes it’s personal, sometimes they feel like the group is bored.” [Focus group participant]

Many leaders at interview and in the surveys commented favourably on the provision of certificates by the AHS for participants. This enabled the volunteers to reward their participants for their hard work. One leader had sourced badges for participants, with assistance from the AHS, while another regularly lent out the resources provided by the AHS. In the case studies, three of the leaders we observed wore a uniform (the t-shirt, or a uniform of their own design).

It is important to respect the volunteer contribution of leaders, and demonstrate flexibility and appreciation in working with them. Leaders currently seem to feel appropriately acknowledged by the AHS team and by participants. Overall, the fall team appear to be successfully managing by partnership with the volunteers, a programmatic approach made doubly hard by the distance between sites, and the competing administrative burdens experienced by AHS staff.

VOLUNTEERISM: WHAT LEADERS MEAN FOR THE TCA PROGRAM

Volunteerism for this program seems to be a binary issue. On the one hand volunteers reduce program costs substantially and bring many positives including passion, enthusiasm, diverse skills, compassion and reach into the community. The program represents an innovative approach to harnessing these and enables AHS to capitalize on community capacity, maximize geographic and community coverage, and generate goodwill.

On the other hand, there are risks at a program level related to dependence on a volunteer workforce. These include quality control, liability and insurance issues, participant screening and safety, and recruitment challenges in terms of volunteer staff; all of which can heavily influence downstream results or effectiveness.

This means that one of the major challenges for program administrative staff is focused on a suite of risk management issues. Part of the support role can also be about managing conflict between leaders within the PALN, though this seems to be only an occasional feature of the network.

There is also some duality around the nature of volunteers and who and how these should be engaged. Within the volunteer corps of this project there are two clear subgroups – community based individuals and health service staff who often have health professional qualifications. The former group are intrinsically motivated and characterised by high levels of passion and commitment. The latter group bring additional clinical skills but may be extrinsically driven or even coerced. There have been additional challenges with realizing investments in training in this group where conflict with other organisational priorities has arisen at a
management level. There has been no clear mechanism for resolving these issues which have represented a substantial waste of program resources in some cases.

We cannot comment on differences in effectiveness between community volunteers and health service staff – other than the clear cost implications around resource utilization and waste.

Within the program administration group there are proposed changes to the support model, with the addition of a senior leader or mentor. It is proposed that this approach would support an enhanced focus on the technical aspects of Tai Chi classes, and circumvent any current impression that leaders were being ‘checked up on’ by program staff. This type of tiered model allows for subtle changes to the nature of support, which may be advantageous and desirable to some leaders, and draws more fully on leaders with clinical skill sets. However, it also raises the possibility of establishing and entrenching a hierarchy which may impact on goodwill within the volunteer corps. It would be important that such a model did not detract from the inclusiveness of the current model, and its respectful engagement with all volunteers.

**SUMMARY**

- Volunteerism is the key determinant of this program’s reach and success. In excess of $350,000 of free labour is provided by volunteers each year.
- Leaders in the program are distinguished by their commitment, motivation, attitudes, initiative and skill.
- Leaders who are health professionals bring special skills and expertise which are advantageous but not critical to the success of the program.
- Leaders are frequently driven by altruism and derive rewards from intrinsic motivations and intangible outcomes. Leadership is challenging but rewarding, and enabling in its own right.
- Most leaders honour their commitment against the contracted obligations, however leader attrition is an ongoing, intrinsic challenge for the program model.
- Succession planning is a key element of sustainability. Leaders frequently manage succession planning themselves.
- In its current format, training and network support is highly valued by leaders and participants. Volunteers feel recognised and appreciated within the program.
- There may be a case for proposed changes to the support model, with the addition of senior leaders or mentors. This may allow an enhanced focus on the technical aspects of teaching Tai Chi which might be helpful for some leaders.
STICKING TO THE PROGRAM: LEADERS AS FOLLOWERS

Leaders are very positive about the TCA program and have often thought deeply about it as the frame of their teaching practice. Many have purchased books and videos to further their education. Most leaders stick fairly faithfully to the sequences taught in the network training.

“I start the class with a deep muscle relaxation—coupled with Qigong Breathing exercises. I find this is a good transition into the Tai Chi after the group has been already participating in their gentle exercises. During our muscle relaxation we are all seated in a circle—we continue to stay seated for the warm up exercises—allowing for those with poor balance to use their chairs and for those with good balance—they do the exercises without the aid of their chair. When starting the Tai Chi movements the group positions themselves in front of me. Again those needing their chair are encouraged to use it. I play Dr Lam’s Tai Chi music as we practise the movements—I find the ‘watch me’ ‘follow me’ and ‘show me’ an excellent tool for teaching Tai Chi.” [Leader, travelling story book]

On occasion, more experienced leaders personalise the program elements, usually to suit participant needs, or to inspire confidence. In the following excerpt, a very experienced leader describes managing a participant population that often included novices.

“I don’t strictly follow the ‘watch me, follow me, show me’ combination, which I know is the official line. I’m more of the ‘watch me, follow me,’ because I know that there are people here that would not come if I put them on the spot. Nobody likes to be put on the spot.” [Leader T]

The movement vocabulary of Tai Chi is unfamiliar to many participants. In order to practise at home, participants need to commit this new movement vocabulary to memory. Older people tend, as a rule, to use external aids, such as note-taking, or inefficient strategies, such as rote-learning, to remember new information. A more effective strategy for retaining new information is associative memory technique, as in the following creative example:

“I think initially I might have used the correct terminology for each of the twelve basic movements, but as time’s gone by I found that maybe if you use a cue that’s related to something they do during the day, like opening the curtains or picking up a beach ball, they tend to remember it a little bit better” [Leader U]

TEACHING TECHNIQUES USED IN THE CLASS

The leaders use a range of techniques to balance freshness with rigor.

(1) REPETITION AND MAINTENANCE OF FORM

Many leaders repeat key moves to correct “sloppiness” and to act as bridging movements for people who drop in and out of program attendance.

“We regularly go back to basics even with the advanced group, to correct things. We’ve found that even things like the opening form can get sloppy after a few months of not really thinking about it.” [Leader, travelling story book]

(2) MIRROR MOVEMENTS

All leaders we observed stood in front of the class, often but not always facing them. Some are able to demonstrate movements in reverse, enabling them to maintain a watchful eye on the class, gauging progress against class interaction & feedback.

“When I first started the class I couldn’t teach with the mirror image. But now I’m quite comfortable with it and I can teach mirror image, which allows me to watch the class for the majority of the time so I can see what’s going on if somebody’s struggling or pushing themselves too hard. Which I like.” [Leader U]

(3) SPATIAL REARRANGEMENT

In some classes, leaders frequently change the configuration and orientation of the class participants. The leaders argued that these movements forced participants to practise cognitive skills like short term memory and spatial thinking. When watching the class, we noted that in classes that change orientation it is impossible for participants to follow the leader unless the leader circumnavigates the class. Instead, they tend to focus on the most experienced participant, much as an orchestra will focus on the first violin in the absence of the conductor. This democratises the class, and may be one of the reasons that leaders are often nominated out of these classes.

In the following diagram (Figure 6.1), a class is broken down into six sections, demonstrating the flow of movement at each of these points. The figures in black are the participants, while the figures in red are the two leaders (where this applies). In subfigures 2 and 3 one of the leaders takes a second group with dementia, while the other class members proceed with their class under
the tutelage of the second leader. During this lesson, the participants faced three different directions for prolonged periods, focusing on different group members as the person to follow. After this class, many of the participants commented on how it made them “think better”.

(4) ADDITION OF BREATHING SEQUENCES
As classes become more proficient they often add in other elements, such as a focus on relaxation or qi gong breathing to augment the movement sequences.

“Now I know they know their movements I am emphasising especially in the last three months to relax more, to deep breathe, to listen to the music and then they get the flow of the Tai Chi going better. And every now and again I look around to see them and they are totally relaxed now and they are doing their breathing properly and yes they are enjoying it. So I think this relaxation thing is a very important thing to do.” [Leader W]

(5) MAINTAINING LEVITY
Many leaders consciously maintain a certain ‘lightness’ and spontaneity in their class. Sometimes confusion on the part of the leader is a vehicle for this light heartedness. There seems to be no expectation that leaders are perfect practitioners of Tai Chi although their relative expertise is acknowledged by participants.

“I still make mistakes. You know, occasionally saying go left, when I mean right. And I think that adds to the fun of it, ‘cause they all pull me up. I think I’ve got a lot more confident with the movements and don’t have to think as hard myself about how I teach it.” [Leader U]
HOW LEADERS MANAGE RISK

Although TCA classes aim to decrease the risk of falling, there is a theoretical risk of falling during a class, though an analysis of the literature has not produced any instances of reported falls during Tai Chi classes for arthritis. Many participants in the AHS region are at heightened risk of falling as they are older, or more infirm, than the identified target population for this intervention. Despite this, there has only been one reported incident in the history of the program which was a minor incident involving the onset of pain for a participant during a class, rather than an actual fall.

Leaders are clearly practised at monitoring their participants while they exercise. The other strategy used by leaders to manage the risk of falling in the frail older population is to allow some of them to exercise from a seated position. Leaders tend to view this as a transitional strategy; that is, participants can undertake the exercise seated until they are strong enough to stand. It is not clear why exercising from a seated position would assist participants to advance to standing exercise, as being seated circumvents much of the balance-training aspects of Tai Chi. Nevertheless, many participants do move from seated to standing exercise, suggesting that the cognitive-enhancing elements of Tai Chi may have been beneficial, or that the participants had gained confidence for other reasons, such as the social support of the group.

Leaders are asked to undertake a standardised risk assessment of class venues prior to commencement and at regular intervals. Based on the four leader surveys, the proportion who report completing a risk assessment varies from 58% to 81%. Very few answered that they did not know this was a requirement. The proportion who did not answer the question at all varied from 18% to 35%, so the rate of risk assessment completion may be higher than reported here. 27% of the leaders are recorded as holding a current first aid certificate, with the status of the remaining 73% not being recorded.

THE SUITABILITY OF THE VENUE

Most venues are chosen for their cost and availability, rather than their accessibility. Of the sites we visited, one was located up a flight of stairs. A participant joked that she had developed the strength through Tai Chi to climb the stairs without her walking frame. It is likely, however, that this venue precluded some participants who may have been more at risk of falls than the participants.

At present the majority of participants are Australian-born of British descent. It is possible that locating classes in church venues may in future discourage sectors of the population from other religious backgrounds from attending (Figure 6.2).

Lack of appropriate venues can be a barrier to class establishment.

“Finding a venue can be a really big problem. I know in one of my places in particular, the places that you think would be the most obvious sites, as in the community halls run by council or whatever, they’re too expensive, and because we’re only charging a gold coin donation, and that’s really important, we can’t actually afford to go there, so it means we’re left trying to find a venue that’s free, and where are you going to get one of them? We’ve been lucky with one or two. We tried to get set up in the community health, because we’ve got exercise spaces in community health, and they wouldn’t have us because it was run by a volunteer, which we’ve done a lot of work into since, because obviously that’s ridiculous…” [Focus group participant]

In some sites, engagement of sports or services clubs has proven beneficial. These bodies have sometimes waived fees in recognition of the community benefit and the potential kudos for the club. Unfortunately for program staff and leaders there is no mechanism for establishing consistency between sites in securing venues. Most participants are satisfied with the venues. The most positive comments about venue were provided by participants who attend an outdoor class by the beach.

“I love the water, I love the atmosphere. We’ve even come on freezing cold days with gloves on and everything and we’ve done it, which has been wonderful……Yeah……Wonderful……I find it very peaceful, my mind at peace with everything. And I don’t think of anything. You’re looking out at the water, you’re listening to the music and… it’s just lovely.” [Participant D, site 1]
SUMMARY

• Leaders largely follow the prescribed content and flow of the Tai Chi program
• Experienced leaders are able to invent additional ways to promote the memory and attention of participants, and ensure their safety.
• Tai Chi is very safe. There have been no significant incidents in three years.
• Risk management procedures are in place however documentation around these is patchy and could be improved.
• Participants are happy with the venues; however, accessing suitable venues remains a significant challenge for organisers
This chapter addresses the resourcing implications and challenges of the program. As a volunteer-delivered program with low-cost venues, there are few recurrent costs. There are, however, significant fixed costs as discussed in previous chapters, associated with the training and support of volunteers. However, the unit cost is lower than that reported in comparable studies, making Tai Chi, as delivered through this program, a very cost-effective intervention.

**PROGRAM COSTS TO GSAHS**

In a recent comparative cost-benefit study comparing Tai Chi with other evidence-based falls interventions, Tai Chi emerged as a mid-ranking intervention. The authors noted that if the unit costs could be kept lower than the assumptions in their model, Tai Chi might emerge as a more cost-effective option. The model in the Monash study cited above had significant recurrent costs, due to payments for the professional trainer(s) and venue hire.

3Home based muscle strengthening and balance retraining; home hazard assessment and modification; multi-disciplinary, multi-factorial risk screening and intervention; withdrawal of psychotropic medication; cardiac pacing and expedited cataract surgery.

### TABLE 7.1 CRUDE COSTING OF PALN; UNIT COST COMPARISON WITH PAID TUTORIAL MODE

<table>
<thead>
<tr>
<th>PALN (TOTAL COST; OVER 2 YEARS; INDEFINITE LENGTH PROGRAM)</th>
<th>PAID MODEL (15 WEEKS; UNIT COST)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIXED COSTS</strong></td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>4 437</td>
</tr>
<tr>
<td>Recruitment</td>
<td>2 819</td>
</tr>
<tr>
<td>Coordination</td>
<td>103 200</td>
</tr>
<tr>
<td>Resources</td>
<td>14 624</td>
</tr>
<tr>
<td>T-shirts</td>
<td>2 658</td>
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<tr>
<td>Network meetings</td>
<td>14 073</td>
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<tr>
<td><strong>RECURRENT COSTS</strong></td>
<td></td>
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<tr>
<td>Instructor time per class</td>
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<tr>
<td>Venue hire pa</td>
<td>5000</td>
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<td>Music licence</td>
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<tr>
<td>Number of participants</td>
<td>1170</td>
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<tr>
<td>Unit cost</td>
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<td></td>
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</tr>
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<td>15</td>
</tr>
</tbody>
</table>

In contrast, the PALN model has fixed up-front costs but the capacity, as time continues, for the program to require less recurrent costs. Table 7.1 outlines the fixed and recurrent costs of the PALN program over 2 years and compares them with the breakdown of costs used in the Monash costing of Tai Chi with paid instructors. The unit cost of the PALN program is one-sixth that of the unit cost derived in the Monash model. This would suggest that Tai Chi in the PALN model may have a higher cost-benefit as a falls prevention initiative than the estimate produced in the Monash study.

The major reason for the cheap unit costs of the PALN Tai Chi program is volunteer labour. As stated in Chapter 5, volunteers contribute $419,000 worth of labour per year. Because of this, the costing breakdown is dominated by...
administration costs in the PALN costing model. The AHS are following the latest recommendations of international volunteer reference groups, that sufficient administrative input be provided to volunteers, especially those with high level duties. The evidence is that this input is highly cost-effective in developing a stable program with a high reach into the community and little on-the-ground cost. It is important to accept that the administrative costs of this program are an essential part of any program that relies upon high-level volunteer labour.

We calculated the hours of administrative work undertaken by AHS staff using a two month recall survey. Over the year approximately 46,800 person hours of exercise are undertaken in classes by participants. Using the data on time use, we calculate that for every hour of labour put into the program by GSAHS (through staff administration, contacting the leader, or filling in forms) 7.4 person hours of exercise were achieved among the population.

COSTS TO LEADERS AND PARTICIPANTS
Costs are minimal for leaders and generally do not prohibit access.

“I collect five dollars per head because the rental of the hall is a bit more expensive than a lot of places. I believe that the venue is so convenient for people to get to that most people don’t mind paying that little bit more to have a good, central, well equipped area.” [Leader, V]

THE HEALTH DEVELOPMENT FALLS TEAM
The program is primarily driven by a local (AHS) response to a NSW Health initiative targeting falls prevention. Most Falls Team staff have been involved since the inception of the program in its current form in 2007. At this time staff could choose to work across one of three health development strands: tobacco, nutrition or falls prevention. Some of the current staff chose falls while others were allocated to the falls stream but have become comfortable working in that context. A few have some familiarity with earlier iterations of supported Tai Chi projects in Greater Murray and Southern Area Health Services prior to their amalgamation.

Functional challenges to teamwork for this group relate primarily to the widespread geographic dispersal of the team across the region, and as a result, the time required for meetings and particularly travel. There are significant direct costs and additional opportunity costs associated with this, and it is often difficult to obtain approval for expenditure. While this dispersal can allow for greater contact with other local community workers and entities, there can also be considerable isolation for individual workers especially in smaller sites.
“In one of my sites I’m actually out in a separate building, and … I’m one of three people who work there and I’m part time, so I’m there some times, and some times I’m not, and the same for the other two people there. I wouldn’t know where they were if they weren’t there. I wouldn’t know if they were coming or not coming, or out or sick or… I wouldn’t have a clue. And sometimes I ring the receptionist who’s, 100 metres away in another building, I just ring her to say “I just want you know that I’m here and I’m by myself”, just because I’m here by myself. I wouldn’t have a clue.” [Focus group participant]

This disseminated team structure generates numerous obstacles to teamwork which need to be actively addressed. The Falls Team utilize a range of telecommunications and other electronic information sharing strategies, and seem to have done this with considerable success, however achieving and maintaining balance is tricky. There is an acknowledged trade off around face to face interactions which are valuable but necessitate compromise.

“…. the last thing I was going to say is if we were able to meet more regularly, the downside of that is, I know …. in the times when I first started, we were travelling quite a lot and people were actually getting annoyed at travelling so much…. and [having] so many hours of work lost to travel time, and losing so many days away from home and not being with your family……so there’s good and bad of both, I guess, but it would be nice to have a better balance.” [Focus group participant]

STAFF INPUTS

The primary input for most Falls Team staff is the time invested in their allocated leader group. The main functions for each HDO in relation to this group seem to be:

• Supporting leaders as required
• Providing access to information and development opportunities
• Monitoring program sites and ensuring the flow of leader data.

There is wide variability of support needs across the leader group, and as a result, time and resource demands are not easy to predict and may not be uniformly distributed. This is a major issue in designing and implementing a structural approach to administering the program, where a universal one size fits all approach is not well suited.

“And also some leaders are AHS staff so you see them every day at work, whereas other people might be out in a little village and if you’re going to go and see them, you have to actually organise to go and see them, so it does vary a great deal. And then it’s everything in between. So lots of phone calls, and I’ve got one leader who’s very happy just to have an email every few months, and he’s very well established and experienced and he doesn’t need anything more than that. He’ll always reply very quickly that he’s fine. Whereas other people need lots more…” [Focus group participant]

To accommodate the varying resource and support needs of leaders, staff need to exercise a degree of flexibility and responsiveness which may be at odds with the need for efficiency or the other demands of their work. At the same time, they also need to provide a relatively predictable form of ‘set up’ support and a uniform monitoring and risk management approach

“They seem to like the paper support, the media support, the promotional…..and the venue setting up support…… rather than the auditing (laughs)… not particularly fond of that, but, so it’s more like all that administrative support. They appreciate that I think.” [Focus group participant]

“Where I am the Tai Chi classes are actually in the same building where I work, so I always make an effort to just pop down to say hi, just to see how everything’s going. “Do you need anything, you know I’m upstairs”, and that sort of chat. That’s when you get, “oh actually by the way, someone mentioned this…” and that’s where you find out those little things, when you find out “Oh actually you know I think there’s a leader who would be a good trainer”, or “I was thinking about this” or “What are we going to do when it gets really cold because there’s nowhere for people to wait, you know there’s no undercover area for people to wait when it gets cold when the classes change over”. And just little things like that… it probably doesn’t make much of a difference, but in the long term I think that does.” [Focus group participant]

A risk management philosophy is an important underlying principle of administering the program. This is partly about addressing the inherent risk in using a volunteer workforce and retaining some quality control. It is also important for liability and insurance purposes where the AHS carries the bulk of the risk. There is a natural symbiosis here between the AHS and the volunteer leaders but it requires some adaptation on both sides. The interplay between sustainability and risk is a fundamental ongoing tension for the program, and one which will probably always underscore its administration at the AHS level (see Table 7.2).
TARGETING THE RIGHT POPULATION

Falls Team staff are aware of the risks of providing services to a health impaired population – hence the focus on the ability of class participants to self-propel for attendance. This is seen as a proxy for screening and assessment of participants, and a factor in the risk management approach of the program. This has also been the reason why transport assistance strategies have not been employed to increase participation by more debilitated individuals who may otherwise be seen as part of the target group.

Some consideration has been given to the institution of slow stream / fast stream initiatives where health professionals are utilised to assess participants and/or conduct classes for participants at greater falls risk. While this has not been resolved within the program, it may clarify risk management matters but potentially impede access and increase costs – either in real terms or in the form of opportunity costs for the AHS.

This issue is a fundamental tension for the program in relation to its stated aims and objectives (especially around high risk fallers).

“So then we actually refined that because we started to believe that residential aged care settings weren’t actually doing the program. The efficacy of the program was really doubtful, so we’ve really tried not to engage them and to very gently let them out. So we only let them in now if we have a space.” [Focus group participants]

While the reservations about Residential Aged Care Facilities (RACFs) seem to relate largely to the perceived efficacy of modified forms of Tai Chi, especially where participants engage in movements while seated, this is in fact a common occurrence in practice – across community classes also. Many participants and leaders describe using this strategy on an ad hoc basis to deal with confidence and safety issues (also a risk management technique). It is largely seen as a transitional mode while a participant develops the skills, strength or balance necessary to progress to standing forms of activity. There is no evidence to suggest this may not also be the case in RACFs, and that the program in these settings cannot be effective using this staged approach, however this evaluation cannot comment on the efficacy or otherwise of this.

The inclusion of RACFs in the program was an evolutionary development. Community RACF settings (retirement homes, nursing homes and hostels) were included during 2007 in line with the equity and risk focus of the TCA program. The value of sustaining support for these facilities has been considered on an ongoing basis during the course of the program as many RACFs have active semi-independent older residents. The same process applies to providing TCA in a supported environment for cognitively impaired participants. The decision to continue support relies, in effect, on delegation of authority to the leaders and is based on positive reports by class members related to participant improvements and enjoyment of the activity, as participant ability varies widely.

ORGANISATIONAL CHALLENGES

Broader change management issues within the organisation (AHS) also impact on program staff at a local level. This may not be able to be modified particularly - the AHS is much bigger than a community based falls prevention program – but a greater understanding of the resource utilization and prioritisation impact of management decisions, at other levels of the organisation, would substantially enhance the efficiency of the program.

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TABLE 7.2 RISKS AND BENEFITS OF THE PALN FOR THE HEALTH DEVELOPMENT TEAM

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<th>RISKS OF THE PALN</th>
<th>BENEFITS OF THE PALN</th>
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<td>Program may be delivered in a way that limits its</td>
<td>Program delivers physical and psychosocial health benefits</td>
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<td>effectiveness</td>
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<td>Adverse events may occur as program deliverers are</td>
<td>Relatively cheap intervention</td>
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<td>not trained health staff</td>
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<td>Financial liability</td>
<td>Sustainable intervention with capacity to renew itself.</td>
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<td>Community penetration and engagement, including raised AHS profile</td>
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**RISKS OF THE PLAN**

- Program may be delivered in a way that limits its effectiveness
- Adverse events may occur as program deliverers are not trained health staff
- Financial liability

**BENEFITS OF THE PLAN**

- Program delivers physical and psychosocial health benefits
- Relatively cheap intervention
- Sustainable intervention with capacity to renew itself
- Community penetration and engagement, including raised AHS profile

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**TABLE 7.2 RISKS AND BENEFITS OF THE PALN FOR THE HEALTH DEVELOPMENT TEAM**

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**ORGANISATIONAL CHALLENGES**

Broader change management issues within the organisation (AHS) also impact on program staff at a local level. This may not be able to be modified particularly - the AHS is much bigger than a community based falls prevention program – but a greater understanding of the resource utilization and prioritisation impact of management decisions, at other levels of the organisation, would substantially enhance the efficiency of the program.
“I work between two sites. In one of my sites, there’ve been lots of things going on in community health, there’s been a restructure that has been on again off again, and I think certainly in one site in particular, I think staff are quite stressed, anxious, feeling as though they are being pushed around a lot in different ways, and then if they get sent on this training and [they’re] not, and it’s something else that’s being added to their workload, that then perhaps not necessarily doing it out of choice or out of passion or whatever……and that’s not helping. When it’s another thing that they are being asked to do on top of everything else.” [Focus group participant]

This issue is compounded by a philosophical tension that beleaguer the program in terms of its orientation and placement within the organisation, relative to other initiatives which might be considered ‘core business’, such as mainstream health service delivery. This means the program may be overlooked as a priority for allocation of organisational resources.

“And I think we’ve always been sole workers in an organisation that didn’t understand what we did……..like I mean, man, 15 years I’ve been in community health as the only health promotion officer, and everyone is doing clinical work, seeing clients, I mean they don’t understand what you’re doing…” [Focus group participant]

In addition to this, resource wastage is a problem for the program, and a source of frustration for program staff. Primary attrition of leaders is a particular concern, especially when it occurs within the AHS staff cohort of leaders. The primary attrition rate is currently low but there is no agreed or established benchmark for what is acceptable. In most cases cited in the qualitative data, primary attrition of staff leaders occurs because of a direct management decision which renders the leader in question unable to deliver on the investment in their training. This is a source of intense aggravation for program staff – both professionally undermining and an obvious waste of limited resources – where the AHS is creating its own problem, consuming health resources with one hand and making them ineffective with the other.

A mechanism to address these intra-organisational issues, and clarify management priorities or increase accountability for resource waste would lead to clear efficiency gains for this program, and potentially enhance morale within the HDT team.

THE PHYSICAL ACTIVITY LEADER NETWORK

The ‘network’ functions at two levels – a formal one and a less formal more ad hoc one. In the former, leaders are brought together once or twice a year to meet face to face. This provides the opportunity to engage in ‘refresher’ sessions and structured interactions or problem solving with other leaders. Both leaders and program staff (HDOs) describe these meetings positively. Benefits articulated include: updating skills; meeting / mixing with other leaders; acquiring information; and forming new ideas to renew / refresh individual practice. Another benefit, not overtly stated, but which is implicit in the data is that these gatherings provide recognition and acknowledgement for leaders. In addition to this, a bi-annual newsletter is distributed to all members. This contains details of current tai chi leaders to encourage individual networking. Informally the network provides a vehicle for leaders, either in geographic proximity or otherwise inclined to connect, to interact in more self determined ways. In some places this seems to be very strong, but in other centres it is less well established or affected by problematic interpersonal relationships. Negotiating interpersonal conflict between leaders can be challenging and time consuming for program support staff. Where this process works well it seems to be a source of real support for leaders.

“Finishing I would like to mention the wonderful back-up support of the Far South Coast volunteers. We share information, get together and pass on little bits of experience and knowledge. It is very comforting.” [Leader, travelling story book]

Challenges for the Falls Team in convening and running the network meetings include: limited attendance numbers, making some meetings unviable; choosing suitable locations that will maximize attendance and enable equitable access for all network members over time; travel implications of the location for leaders who may be geographically distant; and cost.

“And particularly when you’re looking at a full day meeting say starting at ten, finishing at say three, if you add two and a half hours travel on either end of that, that’s pretty full on, and especially for leaders by themselves. So it’s really tricky to try to manage that where are we going to have it this time, and… you do have to almost look at the travel distances from different spots and where we know we’ve got leaders, how far would it, how long would they have to travel for, and that sort of thing.” [Focus group participant]

These issues may require considerable effort on the part of staff to resolve, which can seem futile in the face of minimal leader attendance. For leaders, who all have other commitments in their lives which don’t centre on TCA, the factors which affect attendance are also real:

“I mean, I’ve only been to one of the meetings, and that was one of the most recent ones, and I haven’t been able to attend the other ones basically because my [other] workload and time, and not being able to get a vehicle to go. So I’m sort of restricted in my own access to it.” [Leader U]
Allied health professionals seem to be strong referrers to the program – especially where they are also involved in leading or conducting classes.

“I’ve referred from my Outpatients Department, so I’ll do objective measures on people and therein determine they’ve say got a balance problem, or they’re having co-ordination issues or whatever, and refer them here so I can keep an eye on them, and basically because I think the class has great benefits for them.” [Leader U]

Medical providers also refer into the program, as in the following powerful example of a woman who is referred by a cascading series of providers.

“Her psychiatrist in Wagga (a drop in once a month from Sydney) suggested going to a geriatrician who in turn suggested she try Tai Chi. She also saw a psychologist through the Community Mental Health Service- to work through anxiety and agoraphobia- who suggested Lorna’s* classes.” [Interview notes, site 3, name changed]

GPs are seen as a target group for referral and some HDOs have described actively targeting GP surgeries as a way of bolstering recruitment. It is unclear how strong the response to these initiatives has been. In some sites, participants expressed a sense that the program is not well understood or known about in the community generally. This issue, plus the desire of participants to share the benefits of Tai Chi in a more fruitful way with more people suggest that there may be an opportunity here to engage larger participant numbers through communication and marketing strategies which may have been under utilized or inconsistently utilized across the region.

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### COMMUNICATION & MEDIA

The program appears to have reached a plateau in terms of its community recognition. Expanding recognition would be a way for the program to make its cost-benefit ratio even more favourable (through extending the population level impact of the program). A number of HDOs already describe quite comprehensive and creative strategies which they utilize to enhance community awareness, including professional to professional contact in setting up referral networks:

“….with a lot of my new leaders, we’ve got little business cards, so I print out the stickers with all of the information and A5 flyers and they go out. I’ve done letterbox drops for the leaders as well, and they’ll go around and stick them all into the letterboxes in the towns and get people that way, but along with the media releases, we’re working on a marketing strategy at the moment and referral process. So what I’ve been working on is a list of all the classes that are run, open to public, some of the HDOs have been asking for closed to public lists as well, but they go out to the division of GPs, so at least the doctors are aware as well what classes are offered.” [Focus group participant]

Adapting marketing strategies to highlight benefits and outcomes rather than the identification of a specific problem may engage a broader group of program participants. In addition, some venues, especially service clubs, have begun to realise the value of being seen to provide Tai Chi as a service and have begun to provide adjunct marketing on this basis. This is illustrated in Figure 7.3, and provides a good example of the mutually beneficial relationships which can exist at a community level.

Media has worked well in many sites (especially radio and local print press which seem to resonate with the target group) however there are some participants who express frustration at being unable to engage some people in their personal networks or suggest that it is not well known in their community. Based on feedback from current participants, it seems likely that these may relate to issues such as: perceived ability to actually perform Tai Chi movements; perceptions of the ‘alternateness’ of Tai Chi as an activity; and badging of the program as an ‘arthritis’ intervention.

“I do have a problem encouraging people to attend Tai Chi whereas I don’t with gentle exercise. I know that in some cases calling it ‘Tai Chi for Arthritis’ puts people off coming because they don’t have arthritis. I know this problem has been discussed before, and I think we agreed at one of the training sessions at Borambola that it was ok to drop the word arthritis when speaking to people about attending.” [Leader, travelling story book]
SUMMARY

• The key costs of the program relate to the provision of teaching and administrative resources to leaders. These are more than compensated for by the low unit costs of delivering the program. On current estimates, the unit cost is $76 per participant per year.
• Like any program that uses volunteers to deliver complex programs, a substantial administrative load is an intrinsic aspect of program delivery. That the Falls Team have created such a resilient and much-used program is testament to the commitment each member has shown to supporting leaders and program delivery through grassroots action.
• The network is an important resource for leaders, and warrants continued fostering
• There is a need to promote the program actively to local GPs to encourage referral of more isolated, unwell members of the community.
• One way to expand the uptake of the program among target groups may be to badge it as simply “Tai Chi” rather than “Tai Chi for Arthritis”.
8. THE BENEFITS OF TCA

“\textbf{I love it. It keeps me moving. When I’m stiff in the morning I do my Tai Chi and it loosens me up. It’s helped me a lot with balance; it’s helped me with my concentration. Well, you saw what happens when I’m thinking of something else, didn’t you? It’s good fun and, as you can see, I’m not a slim lady and it’s the only time I feel graceful. Other times I feel like a beached whale… But, anyway, I just love Tai Chi and every time I hear the music I just want to get up and wave my arms around and do things, I just love it.” [Participant S, site 3]}

It appears from the qualitative data that the TCA program delivers a number of outcomes and benefits although these may only be indirectly related to falls prevention which is the stated aim of the program. Broad outcomes of the program fall into several categories: health and other benefits for participants and leaders; behaviour change effects; group dynamics; and sustainability. There are some clear capacity challenges for the program, which link directly to its ongoing sustainability. These include issues around meeting high or unanticipated demand and leader attrition.

Individual benefits for leaders and participants are discussed here in Chapter 8, other program outcome issues are discussed further in Chapter 9.

### HEALTH & OTHER BENEFITS FOR PARTICIPANTS

TCA participants articulate very strongly the benefits and outcomes they perceive as a result of their experience of Tai Chi. The perception of health benefits flowing from TCA seems to be affected by how people conceive what ‘health’ is and the nature of their own health status. The benefits of TCA for participants extend beyond falls reduction or even just changes to physical health status. Three major domains of benefit are identified in the qualitative data: physical; psychological and social. Benefits are distributed relatively evenly across the participants, with most interviewees reporting several types of benefit and often all three. The interplay between these health benefits is further discussed in Chapter 9.

Interviewer: “What’s the most important aspect of attending the class for you?”

Respondent: “Oh, I don’t know whether it’s the socialisation or the feeling of wellbeing after you’ve done it. I think they’re both important and its surprising with Tai Chi…it looks effortless but if you do half an hour straight, you feel it. The sweat just dribbles down your back, you just don’t realise it until you do it. People say “Oh, that’s not exercise” but it is, it uses everything.” [Participant L, site 3]

### PHYSICAL EFFECTS: “WE MAY NOT BE PERFECT BUT WE ARE UP & MOVING”

Physical benefits reported include improvements in movement, balance and stability, exercise tolerance, and a reduction in aches and pains. Some participants, especially those with impaired physical function report quite substantial changes in functional limitations and greater independence and ability around activities of daily living. Many participants gave accounts of the exercise component of TCA enabling them to ‘keep moving’, improve physical coordination and deal with specific pain and discomfort issues.

“\textbf{Am I fitter because of Tai Chi? I would say so, yeah. I would say that I’m more steady on my feet. My knees don’t hurt as much as they used to. My neck doesn’t hurt as much as it used to, I don’t get so many aches and pains as I did before.” [Participant C, site 1]}

The qualitative data suggest that there may be little change in fitness or function for those who also engage in other forms of exercise, but there seem to be big changes for those with limited capacity for other physical activity or greater levels of exertion. These changes are both described subjectively by participants and reported more objectively in the qualitative data by leaders and other participants who are observing changes in their peers over time. Unfortunately few interviewees are able to report objectively measured improvements, as such measurement is not a feature of the program.

“A few months into the training I had a few people who became obsessed with Tai Chi for Arthritis and looked forward to the class every week. After a while I began to notice other things that impacted on the Tai Chi, things like people who had fractured their hip seemed to have a lean and were unable to balance and those who had walkers tend to not use them properly and lean into the walker instead of standing straight.” [Leader, travelling story book]

Some participants have difficulty articulating how their physical health has changed, although they are clear that it has. In a number of cases participation in Tai Chi has assisted them in undertaking other forms of exercise.
or endeavour, so that it performs an enabling function. There is a sub group of participants who are particularly conscious of the benefits of Qigong breathing and focus on this as part of their Tai Chi practice. Often these are people who have had respiratory illnesses or experienced functional limitations, but they are also quite articulate about the benefits.

“I had slipped so much and since I’ve been coming here it keeps me with the breathing and everything, I still get shortness of breath, but I can do more for myself now since I’ve been coming to Tai Chi it’s loosened, it’s the breathing, I know to do the breathing and things like that, it’s helped me that way...........” [Participant H, site 2]

PSYCHOLOGICAL EFFECTS: “NOW I WALK AROUND WITH MY HEAD HELD HIGH”

Participants have the most difficulty specifically defining the psychological benefits they experience. Despite this, many of them are very clear that these are real and meaningful to their experience, if sometimes a little embarrassing to acknowledge. Overwhelmingly, more than 74% of interviewees refer to these psychological benefits in one form or another.

“Tai Chi is lovely. I mean it’s lovely. I love it.......I suppose you can lose yourself in it when you know what you’re doing. It’s hard when you’re following and you just want to get it right. But once you know what you’re doing, you really can let yourself go and then flow into it. And it’s a very good relaxation time. It’s very good. It’s like listening to classical music with a glass of red beside you...........(Laughter).

It’s very calming. I don’t like to say spiritual, it sounds really....... whatever. But that’s what it is I suppose.” [Participant C, site 1]

Major benefits in this category include: increased mindfulness and mental stimulation; improvements in concentration and memory; greater motivation and energy levels; and generalized feelings of well being or ‘feeling good’. The notion of feeling good is a recurring one and is often used to encapsulate participants’ positive responses to the ‘whole package’ that is TCA.

Interviewer: “Can you tell me a little bit more about the wellbeing feeling that you get at the end of the class?”

Respondent: “I feel relaxed, I’m not stiff, I feel clearheaded, I feel like doing things. Oh, it’s a hard one.......I think I retain or renew my get up and go.” [Participant L, site 3]

Many participants talk simply about how much they enjoy the experience of participating in TCA. The features that participants enjoy range from the social interactions to the exercise to the rhythm and flow of the Tai Chi process. “Enjoyment” and “pleasure” are sometimes used as a ‘catch all’ descriptors for the psychological effects as well as the impact of other physical and social interactions, which can be difficult to separate. Regardless, this pleasure is an important highlight in the lives of some participants.

“Oh, I love it..... I pack my bag the night before, ready with a cup and a thermos, because we stay and have a coffee afterwards. And no, I love it. And what am I gonna wear? I iron my clothes and get everything ready, so no, I look forward to coming. I hate it when I miss it.” [Participant D, site 1]

Some participants also describe the humour and escape offered by Tai Chi as providing them with a stress outlet. This seems to be particularly evident for those who have caring or other responsibilities which they find burdensome.

“I think it’s the peace of it, you know? You’re mind doesn’t....... I mean we’ve got four children. And they never leave home. They’re all married and that, but they never leave home. You know, so you have all your family......problems. You know? So you come here and you forget everything. You forget your other life, you know? And you just go along with the feeling good and, yeah, lovely, yeah.” [Participant D, site 1]

Some participants are also able to use Tai Chi movements in other ways and settings, for example at home, to deal with problems they experience. In the following excerpt, a participant responds to a question about what things have changed for her since commencing Tai Chi by describing how she uses simple visualisation of the exercise sequences to aid relaxation.

“I think as far as relaxation, especially sleeping....I just find that if I visualise – go through the movements in my head that it helps me relax. Hmm.” [Participant P, site 4]

CONFIDENCE: NO SUCH WORD AS “CANT”

An improvement or return of confidence is a particularly strong theme, especially where this has been eroded by previous experiences of illness or disability. A number of participants describe developing the confidence to tackle physical tasks and obstacles which they previously would have found daunting or distressing. This is an enabling strategy for a range of people – even where it simply serves
to make them feel an increased level of independence in their daily lives. This is powerfully expressed by the following participant who is an RACF resident:

“Tai Chi has taught me to be calm and centred within myself. At first my thoughts on Tai Chi were ‘how could this help and assist me within my life?’ Gradually I have felt the confidence building within me; it has made me feel great and excited when doing the warm up exercises each day. I am now standing and feeling 6 foot tall instead of 5’3 and my self esteem is higher than it has ever been before. Tai Chi is not a challenge to me but a fabulous physical and mental balance of my mind. Before commencing Tai Chi for Arthritis I always walked looking at the floor, now I walk around with [my] head held high.” [Participant, travelling story book]

This confidence building also underpins the personal empowerment which is offered by TCA participation. There is a sense that, wherever people are at, they will find some features that work for them, and they will be able to participate within the boundaries of their capability. This is a function of the ‘doability’ of the exercise form and the socially supported environment which the group context provides.

“I think it is giving me more confidence in my ability to virtually stay on my feet, to not fall over, it is really a confidence thing with me because I have had so many falls and setbacks and things like that……..yes because I feel I am getting more strength and more balance. That is the main thing more balance. It is such a slow moving exercise that it doesn’t aggravate my fibromyalgia whereas other exercises do. That is what I find the best about it that it is a slow moving thing and you are exercising all those muscles without aggravating my pain condition.” [Participant Q, site 4]

SOCIAL EFFECTS: “PLAIN GOOD FUN”

The social benefits of TCA are reiterated by the majority of participants, including men. For many, TCA classes provide an additional or even key social outlet and an expanded social network. For some this occurs following contractions in social interaction as a result of debilitating illness, geographic relocations, or the effects of ageing. These interactions seem to provide something to look forward to, even for those who don’t consider themselves ‘especially social’.

“I really have no idea. I mean I think the program is good. Whether it’s a health benefit or not, I don’t know. But socially I think it’s great…….. I’m not normally a very sociable person. A social person, I should say. So I suppose I find this as good as anything to be dealing with some people, and meet people.” [Participant J, site 1 (male), *name changed]

“I just think it’s great. There’s one lady who lives alone who comes, she lives 40 k away, and it’s just company for her. And there’s another lady – it’s just company, you can have a chat. That’s the social thing you know, come out today and have a little chat. It’s important as you get older. So I think between remembering what to do and a little bit of socialising it’s good. It’s very good. That’s about all I can say about it.” [Participant O, site 4]

There seem to be two strong themes at play here: the feeling of belonging and acceptance provided by the groups; and the need to maintain social horizons as opportunities and interactions contract in the lives of the target population.

“At first I was a little bit scared. I was a little bit worried. I thought everyone would be looking at me thinking ‘oh she can’t do it you know, she looks a bit awkward, I wonder what’s wrong with her’ sort of thing, but I didn’t feel like that here because everybody has got a little bit of a medical something, that’s why I feel so comfortable in this group and that’s the reason why I went because when I first had my stroke, you see it’s all about the stroke isn’t it?……. And I don’t know if you have been told, but after that we all had a cup of coffee or tea or whatever, go in the lounge and everyone just sort of talks and it doesn’t matter, it might be anything or nothing, but we all feel comfortable and talk and ‘oh, well I didn’t know you had that problem’, and we all ingest something, it’s like good therapy.” [Participant F, site 2]

“Because we like each other we give a hug, well, you saw……and we did that one day and the others sort of looked and we said “Come on, you join in the hugs, too.” Some of the oldies, they haven’t had a hug since their husband died; they cling to you as if to say “I haven’t been touched for years.” So it’s a good, tactile thing. I’ve seen the ladies come out of their shells.” [Participant L, site 3]

Group dynamics are an important and overwhelmingly positive feature of classes. These positive experiences underpin the social interaction and supportive environment that is so important for participant outcomes in this domain, and leaders are pivotal in setting and maintaining this tone. As well as the notion that classes provide a safe environment in which to be imperfect, debilitated, dysfunctional or awkward, there is a recurrent suggestion that the TCA classes function as a type of social leveller – so that traditional markers of social status are less important within these groups, or that they provide a refuge for a different type of social engagement.
BENEFITS FOR LEADERS

Benefits for leaders are largely intrinsically constructed and conceived in terms of their motivation. For the most part, these relate to the interactional feedback they receive from participants and the pleasure of seeing Tai Chi work for people. In some cases leaders also acknowledge that Tai Chi participation has resulted in health benefits for them.

“It’s the fact that people look forward to them. And I always feel good afterwards. I’m always a little on edge beforehand, which I think is appropriate...........And I like to think I’ve got everything sorted out to run a good class. I need to make some preparation. And it’s the appreciation of the people, the fact that they obviously enjoy it, and you know, some people have been coming for the two years anyway. And I feel, I guess I feel good afterwards.” [Leader T]

There is a perception at a program level that TCA leaders derive benefits in the form of resources and community standing from their role. This is neither negated nor confirmed by the qualitative data. While leaders do acknowledge that the help and resourcing of the AHS is an important component in enabling them to undertake their role, they do not see it as conferring a personal benefit. Nor do they speak of leadership itself as bestowing influence or kudos in the community. Rather, they speak of their community responsibility and obligation, with satisfaction derived from the benefits they see accruing to members of their community.

“The class runs with a very standard TCA format. Everyone in the class is very capable so this makes it easy for me. The ENTUSIASM is second to none. They appear to love it and all keep coming back. Thanks to AHS for all [their] help and support and giving me this opportunity to bring this great form of exercise for health and wellbeing to [my town]” [Leader, travelling story book]

SUMMARY

• Participants derive a multiplicity of benefits from TCA participation, which are not restricted to or necessarily focused on falls prevention.
• These benefits include improvements in physical function, psychological health and well-being, and social vigour. These are all relatively evenly distributed among the participant body.
• These benefits address a range of issues which pose challenges for the elderly and ageing population in rural communities.
• Leaders also derive health gains as well as intrinsic and altruistic benefits from the act of social contribution.
This chapter outlines the impacts of the AHS Tai Chi program at three levels: the population, the individual and the community. We begin by reviewing existing data on falls admissions in the region, and consider the methodological limitations of using these population level figures as performance indicators for health promotion programs. We then consider alternative evidence of impact for this program, using a model for the effectiveness of Tai Chi which draws connections between a number of physical and psychosocial determinants of falls in the elderly. The evidence generated by this study suggests that through the PALN model, Tai Chi improves balance through the direct activities taught in the class, and also indirectly, through activities that improve concentration and ameliorate social isolation. Finally, we note that this program also has community level impacts. Because it is delivered by, situated within, and benefits the community, it enhances the social capital of its host community.

**THE IMPACT ON FALLS: QUANTITATIVE DATA**

Figure 9.1 presents the falls admission data for five NSW Area Health Services, from 1999 to 2007. There is considerable year to year variation, with the trend from 2001 to 2007 in GSAHS to increased admissions.
Figure 9.2 shows the admissions for serious consequences of falls (fractured hip, pelvis and femur) over the same period, and here the admission trend for the former GSAHS is downwards. These population level data are useful as overall indicators of trends in falls admission rates, but they are too crude a measure to be useful in assessing the impact of an individual health promotion program.

From the data in the satisfaction surveys (n = 368), the one-year rate of falls among the Tai Chi participants prior to commencing the program was 16%. This is equivalent to other reported falls rates for “vigorou elders”86. Approximately one-third of these falls were serious in that they required medical attention. This is a higher proportion of serious falls than is generally reported in the literature for the vigorous elders, and reflects the fact that many of the participants are carrying significant illnesses. Although the one year fall rates for people who had been doing Tai Chi for more than six months (14%) was less than the one year falls rates for persons who had started within the last six months (20%), this was not a statistically significant difference.

Moreover, we cannot be certain if this is an effect of TCA itself, or if those at most risk had dropped out, leaving a “well participant” effect. On the basis of the qualitative data, we suspect the well-participant explanation is unlikely. Long term participants that we spoke to were often very unwell, and had prioritized Tai Chi to mitigate the risk of falling. In addition people who continue doing TCA classes for more than six months are as likely to report a fear of falling as those who have just started (approximately 56% in both groups report some fear of falling).
INTERMEDIATE EFFECTS: IMPACT UPON ACTIVITY, PSYCHE AND SOCIAL ISOLATION

Figure 9.3 outlines a model to explain the impact of individual and psychosocial factors on falls. Individual factors are illness, age, and medication, all of which (with the exception of medication) are relatively unmodifiable. Psychosocial factors are social isolation, which can limit the range and scope of activity undertaken by individuals and interpersonal or carer demands, in which the person is so overwhelmed they may have little time to pay to their own health. In the model, the red dotted lines indicate negative impacts. Thus, illness, age and medication can have negative impacts on the capacity of the person to undertake a range of activities and to concentrate, in addition to having direct effects on balance. Carer demands placed upon older persons can impact upon their ability to concentrate, making them less likely to pay attention to trip hazards and to right themselves when they do.

In an important review, Wang and co-authors argued that most indications for which Tai Chi is advocated lack a theoretical foundation concerning the mechanism for benefit. On the basis of our study we propose that Tai Chi in the PALN program may mitigate falls risk through a number of inter-related mechanisms:

- It directly improves balance through the physical actions undertaken during the session
- It improves concentration through its intense focus on the present
- It provides an avenue for isolated people to exercise in a safe and supportive arena, and thus encourages them to increase their activity levels. This in turn may improve both fitness and balance.

While the first two mechanisms apply to any Tai Chi exercise program, the third applies particularly to the PALN model, and may not be present in every TCA program.
IMPACT ON BALANCE

Many participants spoke of the improvement in their balance, and related this to a reduced risk of falling as a secondary consideration.

“I find my balance is a lot better since I’ve started Tai Chi, yes, with the different exercises we do standing on one leg. When I first started I used to wobble everywhere and nearly fall over but now I can do it standing on one leg.” [Participant H, site 2]

Several participants had suffered strokes and described in some detail learning how to regain their balance after being “cut in half”, as one participant put it. Rather than rely on others, she determined that:

“I have to do everything on my own, I worked all this out by myself and the Tai Chi sort of helped me get my confidence. I’ve got confidence on my left side…[Tai Chi] just helped my coordination and I felt, I feel better in myself inside… Like good wellbeing.” [Participant F, site 2]

Another spoke of developing strength in the side affected by hemiparesis:

“I have a very weak left side from an injury. The best way I can describe is my mind is telling my body to go up a step or do something and my left side just doesn’t seem to keep up with my mind and that is why I’ve had the falls. …I have had falls in the bath. That is the best way I can describe it, is the mind is telling the body to do this but the left side has not got the strength and stability to do it or didn’t as much. But I feel it is a lot stronger now.” [Participant Q, site 4]

Participants could often articulate how they were using this improved balance in practice. Some interviewees acknowledge having had falls in the past although none describe serious injuries or hospitalization as a result. Relatively few describe any particular fear of falling, although they do concede that this is a risk of advancing age and articulate an awareness of the need to be careful and manage risk behaviours and environmental hazards. A number of participants describe better balance and relate this to a reduced risk of falling as a secondary consideration. One told how she had changed the way she moved to answer the telephone, using what she had learned from Tai Chi.

The following quote, from a leader, illustrates the kind of detailed understanding of balance and falls which is clearly being passed onto students:

“I move differently, I have better energy levels and I definitely notice that it has prevented at least one fall from occurring because I had subconsciously shifted my weight when I was actually halfway through a fall…I was halfway down to falling on the pavement when I caught my foot on a piece of uneven pavement, with the hands out thinking that was going to be it and I must have shifted back to the back foot without even realising I was doing it because suddenly I wasn’t falling anymore.” [Leader V]

IMPACT ON ACTIVITY

Tai Chi is not designed to promote fitness, but it was surprising how many people viewed it as an activity that did improve fitness. We hypothesise that this is not directly due to the movements themselves, but to the increased sense of enablement people feel as a result of increasing their flexibility, and (in some cases) through overcoming social isolation and loneliness. In the following account a participant who lived in a geographically isolated area describes a gradual increase in his exercise level.

“[Tai Chi] does help the balance and to strengthen your joints and so forth…. I started walking around about Easter this year. I think it was after the Tai Chi. Yeah, just walk about two or three kilometres a day. I bought a little mountain bike, second hand, and I’ll have a go at that too.” [Participant E, site 2]

And here, a participant described how the improvement in balance had freed her to expand her activities. She details a range of independent domestic and pleasurable activities which had become available to her once she developed both her balance and her confidence:

“Yeah I can walk around the block now, which I couldn’t do before. I can walk, I play carpet bowls which I couldn’t, you know I can do lots of things, I can vacuum, it takes me a long time to vacuum but I can do my vacuuming now. And I’m just getting to hanging my own washing on the line and things like that. Yeah, that’s helped me a lot in fitness and everything.” [Participant E, site 2]

We noted in Chapter 4 that nearly one in five participants stated that they engaged in Tai Chi to improve their fitness. The evidence presented by participants suggests that this may in fact not be an unreasonable expectation, though the fitness will not be the result of the classes themselves.
Impact on Concentration.

There is an evolving body of evidence on Tai Chi may be useful as a mental health promotion activity, though it is unclear whether or not this is an intrinsic element of the activity itself, the expectation of stress relief in primed individuals, or the result of being in a social environment. For participants in this study, for many of whom Tai Chi was at first quite unfamiliar, the program seems to draw at least some of its effects from the complexity of the movements (cognitive stimulation) and the requirement to be deeply attentive to the moment (mindfulness).

"Tai chi looks easy when you see other people doing it, but when you start to do it and have to coordinate your feet with your arms, it is more complicated that it looks." [Participant K, site 3]

"Actually there were two other girls supposed to be coming with me but they chickened out. They didn't come along. One came once, and she said 'Oh no. I'd never learn that.'......And I think I was the dumbest one they've ever had. ..........I had no co-ordination. I found it terribly difficult." [Participant N, site 4]

Many participants spoke of the cognitive challenge of Tai Chi. In fact, several had specifically chosen it as an activity to ward off Alzheimer's disease.

"Memory's the thing with me. You know I've got a shocking memory, so - that was a big thing for me, to remember each exercise, what to do. So that was a real achievement. To remember what to do next.....When I first started I thought I'd never get it. I didn't think I would ever really get it all to go, but that was my big achievement, the memory. I couldn't remember what to do..............It's Alzheimer's that worries me. Not quite, but I'm getting that way. Memory's the big thing." [Participant O, site 4]

In the following account, a participant describes step by step the processes undertaken by a leader to gradually improve their capacity to concentrate, using encouragement and mnemonic images.

"We were blessed with Genevieve* because she was able to transfer all the exercises to very slow movements and we learned one movement at a time. We learned movement one and then movement two and then married the two together. Then we learned movement three and we did the three. So it was a slow progression. As you get older your thought processes aren't as quick and by doing it slowly and gently and with explanations and voice pictures... tying the coat and pick up the pie and pie in your face and wave your arms at the clouds. Things like that; you've got a picture so it gives you an idea. I don't know whether that's included within the Tai Chi instructions but that's how Genevieve* has taught us. So when she says "Right, you do your brush knee now" we know what we're going to do. And if it's to wave your hands in the air or something, we know what we're going to do, it's just mental pictures." [Participant L, site 3, *name changed]

The Tai Chi classes themselves were often described as very relaxing. This was the case despite some evident distractors (for example, in one site a participant was distracted by people talking about her, and in another, the music choices of the leader were not to the taste of every participant). One element that contributes to this is the breathing practice. Here, a participant describes discovering the benefits of an activity which had initially seemed counter-intuitive to her:

"I do work hard at the breathing. I couldn't get the breathing at first........It took me a long while 'cause I was breathing in my mouth. But I finally got it, and it's amazing what it does to my shoulders...... yeah. And I told Graham that one day. I said, 'oh, my shoulders and neck feel wonderful.'" [Participant D, site 1]

"You sort of learn not to look at them [other participants]. Sometimes you might watch them and it used to put me off - doesn't now because I just sort of tune out. My own little world. Yeah, I know what I'm doing. I don't worry about anybody else much." [Participant O, site 4]

One participant had progressed to the point where she was able to use Tai Chi at home to regulate her stress levels, and thus to promote concentration.

"I find Tai Chi is very good when I'm stressed out. I don't know I've got this weird mind I stress out over little things, I don't know what it is I can't explain it, but I just feel stressed out and the Tai Chi has helped me with that. Like I might have a big problem and think, 'oh you know settle down' and I do my Tai Chi and yeah and I just feel very calm afterwards and then I can focus better." [Participant F, site 2]

Impact on Isolation and Loneliness

We hypothesized that one impact of this program was its impact on social isolation. This is of particular importance in rural Australia. See Box 9.1 for a vignette describing the function of a class in a particularly isolated small community. The PALN is particularly well placed to mitigate social isolation, as the leaders are community workers with an understanding of the local social environment and a desire to promote the well-being of the community.
members, and the participants can participate in the program long-term. For the following participant, the class helped overcome geographic isolation:

“A group activity is good because we’re… out on the farm it’s sort of a loner type of life, you know what I mean? [There are] pleasant feelings [doing Tai Chi] with another group doing something that’s good for you.”
[Participant E, site 2]

Another described her illness which had left her disabled as being isolating in itself:

“When I first started my friends sort of couldn’t handle me, like they just didn’t like the disability that I couldn’t use my hand properly, I was a bit slow on that side and now I can, I’m a lot better than I was before. So that was the reason why I joined the group because I had nowhere else to go, your friends just they wouldn’t invite you out for a coffee because they thought oh you know, she might… people just had that perception of oh she looks a bit weird, but I don’t feel like that in this group.”
[Participant F, site 2]

One very retiring interviewee recalled with delight how other participants had brought her in a coconut cake recipe after she had mentioned it during a post-class coffee. Another commented on the value of the classes held in the RACF, where many participants were overwhelmed with loneliness from widowhood. On the whole, participants describe the group dynamics in a very positive way and suggest that they feel groups are inclusive and accepting, especially by comparison to other groups. The classes were repeatedly described as a safe place to be, and a place, very frequently, where “everyone was the same”, rather than part of an existing social hierarchy.

“The most important thing? I think really you could say it’s a combination of doing something you really like, learning something and having a really good social aspect to it as well…..You’re meeting people and these are really nice people. You get into some lovely conversations with people. It’s a very big part of it that is, yeah.”
[Participant C, site 1]

It’s clear that the feeling of being empowered by the class as well as a lived experience of the health benefits compound to be ongoing motivators for participants.

BEHAVIOUR CHANGE
There is a strong theme in participant narratives around the notion of TCA participation seeding other healthy or health promoting behaviours. Tai Chi often forms part of a repertoire of activities undertaken by participants. This seems to be an interactive relationship – where TCA enables other forms of exercise which in turn enhance ability to maintain TCA participation or enjoy life more fully.

“And I know when my body tells me ease up a bit, you know? I can’t walk very far. But that doesn’t worry me either…..I’m square dancing, but only every now… every second dance…..I couldn’t even do that two years [ago]. It’s good. Yeah, so I feel the Tai Chi does help me a lot that way. Yes. And I’ve more confidence. More confidence in myself as to… and I just enjoy it. Just enjoy it.” [Participant D, site 1]

This is usually described in dynamic terms, so that as participants experience benefits conferred by Tai Chi participation they are motivated to engage in other forms of activity or life in general. There is often a dynamic sense of journey to participant narratives around this. At the same time there is a more subtle suggestion that Tai Chi confers some benefits around learning to listen to one’s body, which is possibly facilitated by mindfulness component of this form of exercise.

“Yes and I suppose because Tai Chi is focussed on the fitness level that helps to make you aware of your limitations and the other things that you do, and perhaps help you take a different approach.”
[Participant S, site 4]

The qualitative data do not especially support a fit with the trans-theoretical model of stages of behaviour change. Rather there is a more useful correlation with alternative theories of behaviour change such as the Health Belief Model or the Theory of Reasoned Action. These models both seek to explain health behaviours by focusing on the attitudes and beliefs of individuals and their links to cues to action, intention and actual behaviour.

These concepts have considerable resonance with the qualitative data, where beliefs and attitudes developed through a lived experience of participation shape behaviour and interactions with others where there is a desire to shape their behaviour also. The I-Change model of behavioural change, developed by De Vries et al more recently, draws on many of these disparate theories to propose a composite explanatory framework, which also focuses heavily on the concept of self-efficacy. This model proposes that behaviour is the result of a person’s motivations or intentions, influenced by both abilities and skills (which will increase the likelihood of intentions being transferred into actions) and barriers (which can decrease the chances of this occurring). A person’s motivation is determined by three factors: attitudes, social influences and self-efficacy expectations, which in turn may be shaped by awareness factors (e.g., cues, knowledge &
risk perception), socio-cultural factors, or predisposing biological, psychological or behavioural factors.

Attitude consists of the perceived cognitive and emotional advantages or disadvantages of the behaviour. Social influences include the perception of others carrying out this type of behaviour (social modelling), social norms relating to the behaviour, and the support they encounter from others in carrying out the behaviour. Self efficacy refers to an individual’s perception of their capability to carry out the behaviour. Different types of self-efficacy may exist, related to: social; stress; skills or routine factors.

CAPACITY BUILDING IN HEALTH PROMOTION: BUILDING SOCIAL CAPITAL

In the previous section we have discussed a range of mechanisms through which individuals feel the benefits of the PALN model for Tai Chi. In this section, we advance the case that the PALN also has community level benefits, that it can be viewed as building social capital. We define social capital, following Coleman, as a form of capital created by individuals who trust one another, act in ways that promote reciprocity and involve themselves in the community. It is a property of the community, rather than the individual. Figure 9.4 is a model of the dimensions of social capital.

**FIGURE 9.4 DIMENSIONS OF SOCIAL CAPITAL**

- Number of memberships
- Contribution of money
- Frequency of participation
- Participation in decision making
- Membership heterogeneity
- Source of group funding

- Helpfulness of people
- Trustworthiness of people
- Fairness of people

- How well people get along
- Togetherness of people

- Everyday sociability

- Asking neighbour to care for sick child
- Asking for help for yourself if sick

- Have you volunteered
- Expectations of volunteering
- Criticism for not volunteering
- Fair contribution to neighbourhood
- Have you helped someone

- Trust of family
- Trust of people in neighbourhood
- Trust of people from other tribes / cultures
- Trust of business owners
- Trust of Gov’t officials
- Trust of judges / courts / police
- Trust of Gov’t service providers
- Trust of local Govt

*Source: Narayan and Cassidy 2001*
Table 9.5 maps elements of the PALN model against these dimensions of social capital. Some of these dimensions (eg volunteerism) are readily recognized within the program. Others – for example, neighbourhood connections – are paradoxically reinforced by the decision not to provide transport to participants to the classes.

In some of the classes we observed, participants offered one another lifts into the classes, or to the coffee shop. During the breaks between classes, photographs of grandchildren or recipes were shared, often between people who did not have these pre-existing connections.

<table>
<thead>
<tr>
<th>DIMENSION OF SOCIAL CAPITAL</th>
<th>EXAMPLE IN PALN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group characteristics</td>
<td>Classes are heterogeneous. Some are conducted in sites where the boundaries to entry are relatively porous and potential participants can observe or join in without committing. Participants contribute to their own classes.</td>
</tr>
<tr>
<td>Generalised norms</td>
<td>There is a generalized norm of behaving supportively and openly to one another, and this is supported by leaders.</td>
</tr>
<tr>
<td>Volunteerism</td>
<td>Classes are led by volunteers, who are increasingly nominated by the community.</td>
</tr>
<tr>
<td>Togetherness</td>
<td>Classes are egalitarian (there are minimal cost barriers). Social gatherings after classes drive togetherness</td>
</tr>
<tr>
<td>Trust (e.g., of government helpfulness and each other)</td>
<td>This is a very popular program delivered by GSAHS (as testified by repeated statements from participants, leaders, and letters to the Minister to continue the program). It instantiates trust between the community and the state government.</td>
</tr>
<tr>
<td>Everyday sociability</td>
<td>Because the programs are led by community members, there appears to be little “professionalized” barriers between participants and leaders.</td>
</tr>
<tr>
<td>Neighbourhood connections</td>
<td>This program supports the building of different neighbourhood connections than those currently existing.</td>
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</table>

The equity focus used by the Falls Team which helped identify underserved groups or more disadvantaged towns has had the effect of seeding programs into quite small towns or populations. Box 9.1 describes the community impact of one very small site, where access to social and physical activity opportunities is restricted. The evidence appears to be that where these programs were able to be established, they generated benefits that extended beyond the program itself to the community.

The egalitarian nature of the classes appears to offer to participants a place of safety where they are accepted. At the same time, the classes are dynamic, and all participants are aware that they will undertake evolving material in the classes. For some, this mirrors the physical and social evolution that occurs outside the classes.
SUSTAINABILITY

There are clear issues with attracting (and possibly retaining) a broader participant group – and there is consistent evidence for this across all four case study sites. It is unclear however, whether TCA appeals to and attracts the more self-determining or self-efficacious participants, or supports the development of self-efficacy and determination. It is possibly both, as there seems to be a strong suggestion that engaging in the behaviour also assists in changing attitudes towards and beliefs about it. This has been reported in the literature and is strongly supported by our findings.

“However, that thing of being able to start off with a program that had 12 moves, was, it’s really important, because it’s not saying we’re just going to do Tai Chi, we’re going to do a specific set of exercise to influence balance, strength and coordination, and these are these exercises. People can grip that and understand it, so that particular type of Tai Chi is really important to the success of the program.” [Focus group participant]

Many participants describe a process of ‘staging’ their physical engagement with the Tai Chi exercises in response to their physical capacity. This was supported by our observations and is in fact a common feature of the program across sites.

“The sequential and incremental nature of the TCA program for participants has been important in that it makes participation ‘doable’ and manageable for the target group. This feature differentiates TCA from many other forms of activity which are less acceptable to participants, and enables the classes to be tailored to meet the needs of participants in a way which can be built on and supplemented as their capacity changes.

During our muscle relaxation we are all seated in a circle - we continue to stay seated for the warm up exercises - allowing for those with poor balance to use their chairs and for those with good balance - they do the exercises without the aid of their chair. When starting the Tai Chi movements the group positions themselves in front of me. Again those needing their chair are encouraged to use it.” [Leader, travelling story book]
This process is used by leaders to encourage development of participatory capacity in functionally impaired individuals, but also on an ad hoc basis by participants as their health status changes over time (for example as a response to seasonal illness). This is important in ensuring that TCA maximises its reach into the target group by promoting optimal accessibility, and maintaining participation over time, which has been shown to improve outcomes.\textsuperscript{14,23,65}

Potential challenges to sustainability include maintaining sufficient ongoing investment in the right triggers and enablers to replenish leader supply and promote ongoing recruitment and retention of participants. The need for continued replenishment of the leader cohort due to natural processes of attrition has already been flagged, and this necessitates ongoing support and development. Given the demographic profile of leaders and participants, it is unlikely that the program can reasonably become self-sustaining in the absence of these organisational inputs at any point in the future.

There have been capacity challenges in some sites as well, where unanticipated demand or leader attrition have occurred. Issues of high demand have usually been accommodated successfully and contribute to the strength and vigour of the program in larger sites. This is a potentially important pool of prospective leaders.

A number of participants allude to community level barriers to recruitment of participants, but it is unclear exactly how or why these operate. Participants themselves seem clear on the benefits and advantages and express some frustration at being unable to influence others to participate.

“I wish we had a few more people that would come. Tai Chi is... anybody can do it. Even if you’re in a wheelchair, you can do your upper body with Tai Chi and that helps.” (Participant L, site 3)

SUMMARY

- The effectiveness of the PALN cannot be measured by changes in hospitalisation rates for falls, as these measures are subject to so much variation, it would be difficult to attribute any change to the program.
- Participants who participate in classes for more than six months have a small, but non-significant decrease in their one-year history of falls, compared to those who have joined within the last six months.
- The program mitigates against falls by directly improving balance, and indirectly through improving activity levels, reducing social isolation, improving concentration, and mediating some elements of behaviour change.
- The program also generates social capital at the community level.
- While the volunteer corps is one of the unique strengths of the TCA program it also poses some challenges to sustainability, along with the age and physical health of the target group. These necessitate ongoing administrative input and support to sustain the successes of the program.
This evaluation found that the PALN was an efficient, and well-respected way of providing falls prevention to older adults. Some of the locations for sites are quite remote, and there has been particular effort expended to set up classes for more underserved populations. The decision to deliver the classes through volunteers, especially community volunteers, has been beneficial for two reasons: it has resulted in a significantly lower unit cost than in comparable Tai Chi programs, with over 4,000 hours of labour provided free by volunteers per year, and it has enabled the program to become embedded in the community, contributing to its growing sustainability and its ability to grow social capital. There is approximately $419,000 worth of teaching provided through this program per year, with the equivalent of $350,000 per annum provided through volunteer labour. This is a critical part of the success of this program. Its cost-benefit, reach and sustainability would be difficult to replicate using different models with “professionalized” leaders or exercise interventions.

The community level uptake of this program is relatively high at 1.7% of the target population, and includes many people who are in frail health and at risk of falls. They are recruited into the program through a variety of measures - referral by health professionals appearing to be the least common.

There is a compelling body of qualitative evidence that participants in Tai Chi learn skills which improve their balance, and make them less prone to falling. The program has a range of other benefits cited by participants which also warrant consideration, particularly its impacts on social isolation, confidence and anxiety. Some of these are likely to be specific to Tai Chi which has a complex movement language which needs to be mastered by participants to progress. While this is cognitively stimulating for some, other exercise opportunities should also be available for adults who cannot cope with the cognitive demands of Tai Chi.

The disseminated and largely devolved nature of the program is one of its strengths. It enables the program to be integrated into community, and for leaders to shape and modify their teaching in responsive but considered ways. There is emerging evidence that new leaders are starting to emerge from within the corpus of participants, often fostered by existing leaders, demonstrating the enabling nature of this program for communities. However, the distributed nature of this program requires skilled and consistent administration and support by the Falls Team if they are to adequately manage issues such as risk and coherence of program delivery.

The Falls Team are to be commended for their level of engagement with this program, and should regard its current state of well-being as a tribute to their stewardship.

For a program of this nature to succeed, it needs ongoing administrative support at the level that currently exists, and ongoing training for leaders and support for their network. These are not costs that can be cut without emasculating the program. It may, however, be worth considering some kind of contribution from alternative sources such as local government or other community partnerships, since the program is now contributing to civic life in many centres. Venue costs may well be something that could be covered by such arrangements.

Tai Chi appears to offer some intrinsic benefits for participants. Exercising in groups with an egalitarian and accepting attitude is also beneficial for individuals, as it creates a safe social environment. Finally the volunteer element of the program enables the program to be delivered cheaply and the program itself to be viewed as a community asset. Not least among its benefits is the fact that it configures the Area Health Service as an institution that cares about the community’s health. This model warrants showcasing as a health promotion activity that is helping to create a healthy and united community.
ELEMENTS OF SUCCESS

One of the objectives for this evaluation was to describe characteristics of successful program sites, especially with respect to sustainability and transferability. We are unable to comment definitively, as we did not conduct a case study in an unsuccessful site. Working inductively from our data however, we believe that successful program sites are often created by successful leaders, rather than arising de novo.

Box 10.1 lists some of the common features of successful program sites.

**BOX 10.1   FEATURES OF SUCCESSFUL PROGRAM SITES**

*Successful program sites have:*

- Leaders who have been carefully selected, and are supported by HDOs, particularly in the early stages of the program, and if they are in smaller, more isolated communities.
- Leaders who demonstrate an engaged, pastoral and committed orientation towards their class.
- Active referral networks with health practitioners and in the community, enabling capture of participants with high needs as well as potentially interested community members.
- Groups that are welcoming of newcomers and include both genders, and display a positive and supportive dynamic towards one another.
- An openness to participants who may have few social connections and are quite disabled
- Potential for participants to advance in their acquisition of skills
- Opportunities for social interactions following the class. Venues which are close to coffee shops are particularly useful.
- An ability to anticipate inevitable leader attrition, and identify suitable replacements. Often this is takes the form of a informal deputy, assistant or senior participant who is seen as possessing particular competence and a ‘developing leader’.
- A supportive venue - with the potential for development of community collaboration and partnerships.
- Integrated risk management techniques woven into the conduct of the class.

*Sustainability* is most affected by:

- Effective recruitment and referral mechanisms which build critical mass; and
- Succession planning and leader development approaches which give classes resilience - through additional capacity and generative relationships which engender new commitment when old resources flag or fail.

The group ‘binding’ which occurs as a result of joint participation over time, and the adjunctive social interactions mean participants have a mechanism to band together and sustain their group under threat.

*Elements most amenable to transferability between sites in order to enhance effectiveness are:*

- Enabling HDOs to encourage and support leaders to recognise and develop potential succession options through identifying skilled participants and natural leaders.
- Harnessing successful marketing, communication and referral strategies and actively employing these consistently.
- Identifying and modelling examples of effective community partnerships which have facilitated program delivery.
The Area Health Service should:

- Actively acknowledge and appreciate the work done by leaders in classes and their community contribution through public recognition. The development of leader mentors is a move in this direction.

- Develop a system for aligning organizational priorities and minimizing internally generated waste and inefficiency, particularly where staff are trained as TCA leaders. Providing staff with leadership training and the flexibility to implement this as part of their work program, and clarifying management priorities as well as increasing accountability for resource waste, would lead to clear efficiency gains for this program, and potentially enhance morale within the HDT.

- Continue to support ongoing training and administrative support for leaders, accepting that there is inbuilt attrition of leaders, and skilled volunteer programs need skilled and supported administrators. These costs should be regarded as investments in a very large program of volunteer labour and community development.

The Falls Team should

- Continue to support activities for networking among leaders. Linking leaders in to local health service configurations more strongly or consistently may also be advantageous, so that they are more visible to local services. This may facilitate localized support and enhance referral.

- Clarify with leaders that they have a reciprocal obligation to the AHS, and that furnishing data (especially in relation to risk) is a quid pro quo for being provided with liability insurance.

- Collaborate with senior leaders to ensure that they are able to pass on their skills to novice leaders in a way which enhances support but ensures respect for all volunteers.

- Investigate further modes of recruitment with health care professionals and community. One way to do this may be to change the title of the class from “Tai Chi for Arthritis” to “Tai Chi for Health and Balance” (for example), which would be more inclusive but still reach out to the target audience. Consistent attention to program awareness within the broader health and social welfare community (e.g., general practices) may enhance referral & participation.

- Actively encourage men to become leaders to encourage more male participants to attend. Targeted promotion (to doctors, barbers or other male centred activity groups) may also be useful.

- Consider seeking feedback formally from leaders who discontinue their role and participants who cease attending to illuminate causes of attrition and identify issues which can be addressed.

- Continue to review policies ensuring the safety of participants, against the need those for whom the classes would be most beneficial. A pilot program in nursing homes led by a senior volunteer may be one way to trial deliberate extension of this model, given the pronounced impact of falls in the RACF population. Consideration of training modules specifically for seated Tai Chi, or other strategies for ensuring the efficacy of this technique, may also be beneficial.

- Consider mechanisms for supporting participants to achieve the levels of participation which are supported by the evidence, and likely to reduce falls, either through increasing availability of classes per week or supporting home based practice.

RECOMMENDATIONS
REFERENCES


Tai Chi Survey

If you run a class with another leader please arrange with your co leader which of you will answer the questions 1-15. All leaders will be asked the questions 16-21.

All questions about your class(es) and participants is for the period February 2009 and July 2009 (last six months).

Please look at the survey prior to the telephone interview so that you are aware of the questions that will be asked

The section is about your contact details and your classes.

To start with, we need to update our contact details of leaders

Leaders name: ____________________________________________________________

Your preferred mailing address: ___________________________________________

Your email address: ______________________________________________________

Contact phone: ___________________________ Mobile _________________________
Fax: _________________________________________________________________

1. Do you run your class with another leader?
   □ yes    □ no
   If yes, who is that please? ____________________________________________

2. Can you tell me how many classes you have established since February 2009?
   □ no new class(es) since February 2009. Go to Q3
   □ one class since February 2009 Go to Q3
   □ two classes since February 2009 Go to Q3
☐ three classes since February 2009 Go to Q3
☐ four classes since February 2009 Go to Q3
☐ no class(es) since February 2009 and no intention to start a new class. Go to Q 25
☐ I have an intention to start a new class in the next 6 months Go to Q15

3. Can you tell me the town(s) and / or suburb of your current classes.

Class 1 Town_________________Suburb______________________________

Class 2 Town_________________Suburb______________________________

Class 3 Town_________________Suburb______________________________

Class 4 Town_________________Suburb______________________________

4. Can you tell me the venue(s), day(s) and time(s) of the class(es)?

Class 1 Venue________________Day_________time________

Class 2 Venue________________Day_________time________

Class 3 Venue________________Day_________time________

Class 4 Venue________________Day_________time________

5. Since August which classes (if any) have ceased?

Class 1 ceased ☐ yes Town__________Address________________________

Class 2 ceased ☐ yes Town__________Address________________________

Class 3 ceased ☐ yes Town__________Address________________________

Class 4 ceased ☐ yes Town__________Address________________________

6. Approximately how many months have the class(es) been running?

For each class you are running tick the number of months the class has been running. Even if the class has ceased.

Class 1 ☐ 1 month ☐ 2 months ☐ 3 months ☐ 4 months ☐ 5 months
☐ 6 months ☐ 7 months ☐ 8 months ☐ 9 months ☐ 10 months
☐ 11 months ☐ 12 months or more
7. Approximately how much longer do you intend to run your class(es) as part of the GSAHS Tai Chi program?

- [ ] no intention to stop at present
- [ ] until my 40 week obligation is complete
- [ ] Write your own answer. ____________________________

8. Have you completed the risk assessment checklist that was included in the Physical Activity Leader Kit for all your classes at different venues?

- [ ] yes
- [ ] no
- [ ] not aware of the risk check list

The next seven questions are about your participants. You will need to refer back to your participant registration forms and attendance sheets for these questions.

9. Since February 2009 how many participants have you had in all your class(es)? This includes classes that have commenced and ceased. Exclude participants who may have only attended three or less classes.

Total number of people attending all your classes ______________________

10. Since February 2009 how many males have attended class(es)? This includes classes that have commenced and ceased. Exclude participants who may have only attended three or less classes.

Total number of males in all your classes ______________________

11. Since February 2009 how many of your male participants are in the following age ranges? Exclude participants who may have only attended three or less classes.

- [ ] less than 55 years
- [ ] 55 - 64 years
- [ ] 65 - 74 years
- [ ] 75 years and over
12. Since February 2009 how many females have attended class(es)? This includes classes that have commenced and ceased. Exclude participants who may have only attended three or less classes.

Total number of females in all your classes____________________________

13. Since February 2009 how many of your female participants are in the following age ranges? Exclude participants who may have only attended three or less classes.

☐ less than 55 years  ☐ 55 - 64 years
☐ 65 - 74 years  ☐ 75 years and over

14. Since February 2009 approximately how many males and females have dropped out of your class? (ie- participants who have attended for 3 or less classes)

Total number of males who dropped out________________________________
Total number of females who dropped out_______________________________

All leaders may answer the remaining questions.

The next 10 questions are about how satisfied you are with the Physical Activity Leader Network. Tick the response that is closest to your opinion.

How would you rate the network?
15. Method of learning Tai Chi
☐ Poor  ☐ Average  ☐ Good  ☐ Very Good  ☐ Excellent

16. Access to network resources
☐ Poor  ☐ Average  ☐ Good  ☐ Very Good  ☐ Excellent

17. Assistance to establish classes
☐ Poor  ☐ Average  ☐ Good  ☐ Very Good  ☐ Excellent

18. Assistance with risk assessment or any class / participant problem
☐ Poor  ☐ Average  ☐ Good  ☐ Very Good  ☐ Excellent

19. Networking leaders in the same geographic area
☐ Poor  ☐ Average  ☐ Good  ☐ Very Good  ☐ Excellent
20. Network meetings
   - Poor
   - Average
   - Good
   - Very Good
   - Excellent

21. Newsletter
   - Poor
   - Average
   - Good
   - Very Good
   - Excellent

22. Opportunities for ongoing training
   - Poor
   - Average
   - Good
   - Very Good
   - Excellent

23. Overall, how satisfied are you with all of the network activities?
   - Poor
   - Average
   - Good
   - Very Good
   - Excellent

24. The Physical Activity Leader Network activities are important in providing me with ongoing support, mentoring and motivation. Tick the response that is closest to your opinion.
   - strongly agree
   - agree
   - disagree
   - strongly disagree
   - not sure

25. Would you like to cancel your membership to the PALN. This will include no further contact or support
   - yes
   - no, we will continue to send you information and contact again in July 2009

26. Do you have any additional comments you would like to add?

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________

Thank you
EVALUATION OF THE GSAHS PHYSICAL ACTIVITY LEADERS NETWORK
Draft Interview Schedule - PARTICIPANTS

Questions about motivation:

Can you tell me why you joined this class? (Prompts: When did you join? How did you find out about it? Did you know someone else who was doing it?)

How often do you attend these classes? Have there been times that you didn't attend? (Prompts: Why?)

What is the main thing you get out of Tai Chi? (Why do you keep coming? Feel better? Social engagement?)

How easy do you think it is for new people to come along to a class? (prompts: How did you find your first class/es? What happens when a new person joins the class?)

Questions about falls and fitness:

Do you think your fitness has changed over the time you have been doing the program?

How would you rate your general fitness when you started going to Tai Chi (out of ten?) and now?

Have you ever had a fall? When was the last time that you had a fall? (describe what happened). How often does this happen to you?

Is falling something that you worry about? Has participating in tai Chi classes changed the way you feel about falling? In what way?

Questions about sustainability:

Do you do any of these exercises at home?

Do you do any other forms of physical activity?

What keeps you attending these Tai Chi classes? (prompts: Friends, the leader, the time, the accessibility of the venue).

What is the best thing about the classes? What is the worst thing about the classes?

Is there anything that could change to make it easier for other people to learn Tai Chi?

These classes have expanded (something to indicate that this is successful) OR these classes were not very sustainable in this community. Do you have any opinion on why this might be?

What would you do if (did you do when) the classes stopped operating? What would the impact on your community be?
EVALUATION OF THE GSAHS PHYSICAL ACTIVITY LEADERS NETWORK
Draft Interview Schedule - LEADERS

Questions about motivation:

Can you tell me why you became a leader? (Prompts: When did you start? How did you find out about it? Did you know someone else who was doing it?)

How often do you run these classes? Have there been times that you didn’t want to continue? (Prompts: Why?)

How easy do you think it is for new people to come along to a class? (Prompts: What happens when a new person joins the class? Do you do anything specific to welcome newcomers?)

Questions about falls and fitness:

Do you think your fitness has changed over the time you have been doing the program?

How would you rate your general fitness when you started leading Tai Chi (out of ten?) and now?

Do you think Tai Chi has changed fitness or health status for participants in your classes? (Are participants fitter / healthier / more enthusiastic? Have people described any benefits or drawbacks to you?) Can you give examples? What changes have you observed / heard about?

Questions about sustainability:

Why do you continue leading these Tai Chi classes? (Prompts: Are there things that make this worthwhile for you? the social contact, personal gain, contractual obligations).

Have you changed anything about the way you lead the classes as you have gone along? (Prompts: What have you learnt from your experience as a leader?)

Is there anything that could change to make it easier for your participants to learn Tai Chi? (Prompts: Is there anything you’d like to change or any support you need?)

How do you find being a member of the Physical Activity Leaders Network? (Prompts: what are the advantages / disadvantages of the network? Why? How has the network helped you?)

These classes have expanded (something to indicate that this is successful) OR these classes were not very sustainable in this community. Do you have any opinion on why this might be?

What do you think the impact on your participants / the community would be if the classes stopped operating?
## Composite Risk Factor Assessment Tool

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<tr>
<th>Indicator</th>
<th>Score</th>
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<tbody>
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<td>&lt;80</td>
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</tr>
<tr>
<td>80+</td>
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<td></td>
</tr>
<tr>
<td>RR 60-70 yrs 1.1; 70-80 yrs 1.21; 80+ yrs 1.5</td>
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<tr>
<td>Chronic disease</td>
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<tr>
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</tr>
<tr>
<td>One or more chronic diseases</td>
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<td>&gt;1.3</td>
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<tr>
<td>History of CVA</td>
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</tr>
<tr>
<td>History of CA</td>
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<td>Repeated dizziness</td>
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<td>1.2 – 3.12</td>
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<td>History of falls</td>
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<tr>
<td>None</td>
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</tr>
<tr>
<td>History of falls</td>
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<td>2 – 5</td>
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<td>Psychiatric medication</td>
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Tai Chi

Preventing Falls, Promoting Health, Engaging Community: