P I L S

The Promoting Independent Living Study

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Table of contents

Abstract .............................................................................................................................. xi
Acknowledgements .......................................................................................................... x

Chapter I: Setting the scene .......................................................................................... 12
  1.1 Introduction................................................................................................................. 12
  1.2 Definitions................................................................................................................... 4

Chapter 2: Literature review .......................................................................................... 7
  2.1 Introduction................................................................................................................ 7
  2.1.1 Literature Search ..................................................................................................... 7
  2.2 Ageing ....................................................................................................................... 8
  2.2.1 The changing landscape of the ageing population ................................................ 8
  2.2.2 Implications of burgeoning ageing population .................................................... 10
  2.2.3 Health utilisation and expenditure ........................................................................ 12
  2.2.4 Health utilisation and expenditure in residential care ......................................... 12
  2.2.5 Residential Older People's demographic profile ................................................. 13
  2.3 Health in old Age ..................................................................................................... 15
  2.3.1 Functional status and physical function in ageing ............................................... 16
  2.3.2 Prevalence of disability ......................................................................................... 18
  2.3.3 Frailty .................................................................................................................... 20
  2.4 Physical activity and older people .......................................................................... 22
  2.4.1 Introduction .......................................................................................................... 22
  2.4.2 Influences on older people's physical activity ...................................................... 23
  2.4.3 Physical activity in frail and very old people ......................................................... 26
  2.4.4 Effects of physical activity and exercise on physical performance ..................... 28
  2.4.5 Effects of exercises on strength training ............................................................. 29
  2.4.6 Effects of exercise on balance ............................................................................. 32
  2.4.7 Effects of exercise on endurance ......................................................................... 34
  2.4.8 Effects of physical activity and exercise on psychological health ...................... 35
  2.4.9 Psychological effects of physical activity in residential care ............................... 36
  2.4.10 Effects of physical activity on health related quality of life .................................. 37
  2.4.11 How much physical activity or exercise is enough? ............................................ 42
  2.4.12 Dose response for frail older people .................................................................. 42
  2.4.13 Adherence to physical activity and exercise programmes .................................. 44
  2.4.14 Moderating factors ............................................................................................. 44
  2.4.15 Mediating factors ............................................................................................... 45
  2.5 Goal setting ............................................................................................................ 46
  2.4.1 Goal moderators ................................................................................................... 46
  2.4.2 Goal setting and older people ............................................................................. 47
  2.6 The environmental impact of living in a residential care facility ............................ 48
  2.6.1 The paradox of dependency and independence for residents ............................ 48
  2.7 Systematic review of physical activity interventions in residential care ............... 50
  2.7.1 Aims and review objectives ................................................................................. 50
  2.7.2 Methods .............................................................................................................. 50
  2.7.3 Results.................................................................................................................. 51
8.26 Job satisfaction ................................................................. 256
8.27 New found confidence ...................................................... 257
8.28 Work enrichment ................................................................. 257
8.29 Personal rewards ................................................................. 258
8.30 Sustainability .................................................................. 259
8.31 Ongoing commitment ....................................................... 259
8.32 Resistance to ongoing change ............................................. 260
8.33 Cultural change ................................................................. 261
8.34 Discussion ...................................................................... 262
8.34.1 Factors linked to success of the PILS intervention .......... 264
8.34.2 Barriers to overcome .................................................... 270
8.34.3 Unexpected hindrance .................................................. 271
8.34.4 Reflections on sustainability ........................................... 274

Chapter 9:  Discussion and conclusions........................................... 275
9.1 Introduction ....................................................................... 275
9.2 Intervention and trial design ................................................. 276
9.3 Trial results ....................................................................... 278
9.4 Variability between homes .................................................. 283
9.5 Quality improvement initiatives .......................................... 284
9.6 Organisational culture ....................................................... 285
9.7 Relevance of findings to clinical practice ......................... 286
9.8 Implications for research .................................................... 290

References .............................................................................. 293
List of figures and tables

Figure 1: Components of the intervention (WHO 2001) ........................................ 78
Figure 2: Study design ................................................................................................. 96
Figure 3: Design ............................................................................................................ 166
Figure 4: Baseline characteristics of residents’ medical history ............................... 170
Figure 5: SF-36 Physical Component subscale ......................................................... 176
Figure 6: SF-36 Mental Health Component Subscale score ..................................... 177
Figure 7: Baseline relationship between self rated fear of falling ............................ 179

Table 1: Older people in residential care by age group and type of care .......... 14
Table 2: Prevalence of disability severity among people, by sex and age .......... 19
Table 3: Randomised Controlled Trials of activity interventions .................... 40
Table 4: Exercise recommendations by dose, intensity, safety and efficacy ...... 43
Table 5: A selection of successful interventions in residential care .................. 58
Table 6: Rest home and participant eligibility and exclusion criteria ................. 99
Table 7: Number of residents recruited by rest home .......................................... 103
Table 8: Numbers recruited for phase 2 ................................................................. 104
Table 9: Order of baseline assessment and three month and follow ups .......... 119
Table 10: Distribution of residents’ demographics ................................................. 168
Table 11: Comparison of outcome measures ......................................................... 180
Table 4: Fear of falling at baseline and six months .............................................. 181
Table 14: EuroQol and VAS scores for participants ........................................... 182
Table 15: Summary of residents’ goals presented in three domains ................. 184
Table 16: Number of residents who achieved goals on completion of PILS .... 184
Abstract

Background: Activity and exercise are important for older people as age related reduction in muscle strength and power, cardiovascular function and neuromuscular response times all contribute to the declining physical ability with age. Increasing habitual exercise may assist older people in maintaining functional performance even for those older people living in residential care.

Methods: The study involved a randomised control trial in five low level dependency rest homes. Rest homes were randomised by wing. The participants n=149 received either the individualised goal driven programme of repetitive activities of daily living exercises or usual care and were found to be largely representative of a population based sample. Outcome measures were assessed at three months and six months post randomisation. The experiences of participating in the Promoting Independent Living Study of staff and older residents were gathered by qualitative methods in order to establish the impact of the intervention process on staff and factors contributing to the success and failure of the intervention with regard to both the residents and staff.

Findings: The intervention was acceptable to residents shown by the high response rate and low drop out rate. All residents set a functional goal and most of these goals were attained at six months. In the intervention group self reported health related quality of life improved at three months in comparison with the control group. There was no significant difference between the interventions or control groups on either mobility measures at any time or any measures at the six month follow up. Residents and care staff perceived the programme to be both acceptable and practical to undertake and deliver in residential care. The functional activity programme not only created the opportunities for increased physical activity but also gave residents a new found sense of purpose. Residents found the goal setting activity enjoyable initiating activities in order to reach their functional goal. The lack of engagement of other staff, in particular the registered nursing staff, often constrained the implementation and led to high levels of frustration for caregivers.

Conclusion: This study suggests that an individualised repetitive activities of daily living programme may have an effect in improving health status for residential care residents at least in the short term. In the future, targeting interventions to residents that can best benefit will be important if resources are scarce.
Acknowledgements

Firstly I would like to thank the older people who participated in the study, without your willingness and commitment this project would never have got off the ground. I would also like to thank the rest home staff for their dedication to the research project; it was commendable given how stretched resources were at times during the implementation of the trial.

Many other people have contributed to this thesis or supported me over the years. I am eternally grateful to my supervisor Dr Ngaire Kerse for her encouragement, enthusiasm and patience. I have learnt so much from Ngaire in conducting clinical trials and research in general. I am extremely grateful to Dr Matthew Parsons for his enthusiasm, support and guidance as a supervisor and colleague. I am also thankful for Dr Nicola North who supervised me through the qualitative chapters of this research. I am indebted to Elizabeth Robinson (biostatistician) who assisted me in statistical advice during the development and analysis of the PILS data. Others who have supported me along the way include Hugh Senior thanks for your companionship and support, and to Judy Kilpatrick and the School of Nursing who have been extremely patient when other roads were travelled, your patience has been appreciated. Kaye and Max who opened their hearts and home to me so I could have a haven to write and reflect your hospitality can never be repaid.

To the rest of my wonderful family and friends thanks for the support, endless babysitting and belief in me as well as pushing me along at times when it got tough. What a lot of fun we have had along the way. Thanks guys you have been fantastic.

Most importantly I thank my children Rachael and Victoria for their love, support they have given me over the last six years as I have crafted this thesis.
Dedication

This thesis is dedicated to my mum, Mary Forrester who passed away during the early stages of the research project. Thanks for teaching me how to see older people in their own eyes. Your belief and support in my ‘late development’ as an academic nurse has carried me through this journey.
Chapter I: Setting the scene

1.1 Introduction

Understanding the pathways from disease to disability and reducing the rate of overall impairment in the older population is a key objective globally. In New Zealand, the Health of Older Persons Strategy (2002), states: “a specified objective in the next five years is to reduce the rate of disability among older people”. Internationally, government policies are acknowledging the need to reduce disability in response to a growing ageing population. For example, the United States (US) Federal Government stipulates the need to reduce disability in people over 65 years specifically in performing activities of daily living. Achieving this aim will reduce overall disability in this country to 9% or less than 90 per 1000 individuals over 65 years (Manton, Staddlard, & Corder, 1994). In New Zealand, the prevalence of moderate and severe disability is higher among those in the old and very old age groups. The incidence of severe disability among females 75 years and over is estimated to be two in every five females (Dwyer, Gray, & Renwick, 2000).

Functional status is highly correlated with and inherent to health status for older people even for the frailest in residential care (Thomas, 2001). The level of function generally declines with age and complexity of health problems functional status naturally improves in a minority of older people (Jette & Branch, 1981) Emerging research shows that poor physical function has a major influence on the functional status and disability of older people, which appears to have a greater impact on older people in residential care than those living in the community. International research shows that daily, moderate intensity physical activity undertaken by older people reduces the risk of cardiovascular disease and falls, and also delays the onset of conditions such as arthritis, osteoporosis and cognitive impairment (Jagger, Spiers, & Clarke, 1993). Studies of physical activity levels in nursing homes have found a correlation between low levels of physical activity and increased functional dependency (McRae et al., 1996). As maintaining or re-establishing physical function is very important for this group of older people devising physical activity initiatives in
residential care settings that will improve function and prevent or reduce falls could provide significant gains. There has been little published research within New Zealand regarding physical activity interventions or programmes in residential care. The US, Europe and to a lesser extent United Kingdom (UK) and New Zealand have challenged gerontology researchers to identify effective interventions that increase physical function or decrease or modify disability free years for those particularly over the age of 75 years. One way might well be to introduce the idea of exercise as being part of every day life to even the more frail older people such as that being encouraged and well researched for the younger population including children, young and middle aged adults (Pate, Pratt, & Blair, 1995).

A large study involving community dwelling older people in New Zealand proved that older people can improve strength and balance very successfully with the assistance of periodic supervision by a visiting therapist (Campbell et al., 1997). This study has not been replicated in residential care in New Zealand. While Fiatorone and Morris’s, well designed exercise programmes situated in residential care showed some success, these were tested on relatively healthy older people living in the homes rather than the frailest group of residents (Fiatorone, O’Neill, & Doyle, 1994; Morris et al., 1999).

Most physical activity and exercise interventions appear to be undertaken by researchers rather than by the usual staff in the rest homes. Several studies have attempted to use usual care staff with less than optimal results, attributing blame to the lack of success on the limited commitment from management staff (Fiatarone-Singh & Mayer, 2002; Keysor & A. Jette, 2001). Long term care quality improvement initiatives, that aim to improve nutrition, pressure and wound care, have provided some insights into ‘best practice’ but as these relate to specific clinical practices the relevance to physical activity interventions is negligible. This thesis explores factors that make the delivery of a physical activity intervention successful or not successful at the facility level.

One of the key factors for older people in residential who refuse to participate in either individual or group exercise or physical activity programmes is their lack of
understanding about the benefits of exercise for the frailer individual (Fiatarone-Singh & Mayer, 2002). This lack of understanding is often shared by their families and the residential care staff.

This thesis, Promoting Independent Living Study (PILS) will explore factors that make the delivery of a physical activity intervention successful at the facility level, from the perspective of the residents enrolled in the study and the staff at the facility. This provides a model of best practice for subsequent interventions. This study asks two specific questions: Can/does physical activity improve function and quality of life for older people living in residential care? Can usual staff in the care facilities implement the programme as part of the overall daily routine of an older person? This research fits within the context of physical activity in older people and addresses important and less researched questions, what is needed for successful exercise promotion for frail older people living in residential care? The structure of the thesis is as follows:

- Chapter II, a review of the literature relating to physical activity and exercise in old age, exercises to improve strength and reduce disability in old age, a description of the methods and findings of a quantitative review of the effects of physical activity and functional exercise programmes on older people residing in residential care;
- Chapter III, an outline of the methods used in the Promoting Independent Living Study (PILS);
- Chapter IV, a description of the roles and realities of residents and staff living and working in residential care;
- Chapter V, description of the intervention of the Promoting Independent Living Study;
- Chapter VI, the results of the randomised controlled trial, Promoting Independent Living Study and discussion of the limitations and strengths of the study in relationship to the literature;
- Chapter VII, a qualitative analysis of the residents and staff views of the Promoting Independent Living Study; and
- Chapter VIII, conclusions on the effectiveness of functional repetitive activities of daily living intervention (PILS) in improving physical activity in frail older people.
1.2 Definitions

It is beneficial to define the key words, older people, disability, residential care, activities of daily living in relation to their context within this thesis. Contextually, word definitions can be interpreted and have different meanings in different settings.

1.2.1 Older people

For the purpose of this thesis, an older person is defined as a person over 65 years of age. Generally speaking there is no commonly accepted definition of what makes up old age in a purely chronological sense, although most developed countries have decided that 65 years defines an older person as this is often retirement age at which an older person is eligible to receive government superannuation. The complexity of defining old age partly lies with the fact that aging is not homogeneous. Age related changes do not start specifically at a particular age. The mechanisms integral to ageing are far more complex (Light, Grigsby, & Bligh, 1996).

1.2.2 Residential care

Residential care describes an institution that provides 24 hour shelter. It is also referred to as long term care. In New Zealand, there is a provision for three levels of residential care services for older people defined in section 6 (2) and section 4 of the Health and Disability Services Act 2001. These are:

- Rest Homes: low level dependency homes where residents require assistance with most instrumental activities of daily living and at least two activities of daily living. Residents can usually ambulate independently or with assistive devices. The residents’ care and medical conditions are stable and do not require a registered nurse to be present 24 hours a day.

- Private Hospitals: high level dependency homes where residents are dependent in most activities of daily living and require daily nursing care. These residents usually need two persons to assist with transferring, and frequently need assistance with toileting and feeding. They have complex medical needs and require the presence of a registered nurse on the premise at all times.

- Secure Dementia Units: provides care in a secure environment for older people who exhibit behaviour likely to cause concern to others, or who may harm themselves.
1.2.3 Disability
This thesis will use the definition of the World Health Organization (WHO) definitions for the terms: disability, impairment, participation and activities of daily living (World Health Organization, 2001). Disability is defined as any limitation in physical or mental activity resulting from a long-term condition or health problem (Ministry of Health, 1998). More recently, ‘activity’ has replaced the term ‘disability’ from the 1980 International Classification of Impairments Disability Handicap (ICF) as a positive definition which relates to the nature and extent of functioning at the level of the person (WHO, 2001). Impairment is a characteristic within an individual which is long term and may, or may not, be the result of disease or injury and may affect the individual’s cognitive or physical function (WHO, 2001). Participation replaces the term ‘handicap’ in the 1980 ICIDH and reflects the nature and extent of a person’s involvement in life situations at societal level, and considers the interplay between impairments, activities, health conditions and contextual factors such as physical, social and environmental factors (WHO, 2001).

1.2.4 Function
Activities of daily living are basic activities such as bathing, dressing, transferring, toileting and feeding. Instrumental activities of daily living are more complex activities such as to perform meal preparation, handling personal finances, shopping, travelling, doing housework, using the telephone and taking medications.

1.2.5 Staffing
Registered Nurse is a nurse, who is registered with the New Zealand Nursing Council, and has a current practicing certificate. A Registered Nurse is ‘regulated’ when registration and a practicing certificate are current. The registered nurse is professionally accountable for nursing practice and has overall responsibility of care delivery in the health setting in which they work.

Caregivers’ also known as health care assistants are support workers who are ‘unregulated’. They provide most personal cares to older people in residential care facilities.
Chapter 2: Literature review

“Limiting the limitations of old age, and achieving functional longevity – is already within our power”

Peter Snell (Listener, November 24, 2007)

2.1 Introduction

This chapter reviews the literature relating to ageing and physical activity and seeks to provide insights, make comparisons, and provide information relevant to older people in general and older people in residential care in New Zealand. The literature review is organised in key themes in the field of ageing and physical activity and provides an in-depth and critical analysis of many of the publications within each theme. The first section explores the demographics of ageing in general and the demographics of ageing in residential care. This is followed by a discussion on the health status of older people and a review of disability and function, including definitions of disability, function and frailty; the interrelationships, risks and consequences of disability; and functional limitations. Physical activity and its interrelationship with health of older people, including those in residential care, are explored in section three. In the fourth section evidence on the effectiveness of physical activity interventions on physical and psychological performance, including factors moderating and mediating adherence to physical activity, is reviewed. The final section examines the evidence of physical activity interventions in residential care.

2.1.1 Literature Search

A systematic approach was used to identify the literature. The search strategy was designed to access published and unpublished literature from primary and secondary sources. The literature search was conducted on Medline, CINAHL, AMED, PsychINFO, PeDRO, and Journals@Ovid full text databases using the following key words or phrases: elderly, aged, ageing, nursing home, residential home, frailty, physical activity, physical training, exercise, strength, balance, endurance, ambulation, gait, walking, activities of daily living, physiotherapy, physical therapy, rehabilitation,
goal setting, and randomised controlled trials. Articles reviewed for Chapter’s five, seven and eight were retrieved using the key words or phrases: residential care; and nursing home, or long term care, general exercises, interventions on falls prevention, physical exercises, strength training, balance training, cluster randomised trials, randomised controlled trials. The review considered all primary and secondary papers, and reports, where issues surrounding quality improvements and staffing in long term care were addressed.

These terms were used to conduct an extensive search of the literature through the University of Auckland Philson and General Libraries. The Tamaki Library, Philson and General Libraries were used to conduct all manual searches. Other online searches were undertaken using the Internet search engine Google, http://www.google.co.nz; http://www.moh.govt.nz; and http://www2.stats.govt.nz, for publications and reports which were used as resources. Reference lists and bibliographies of articles located were searched for relevant literature. The literature was comprehensively searched (1990-2002) prior to the development of the intervention, the literature has been revisited in 2010 following completion of the study. The literature identified empirical evidence from the previous three decades, in order to consider all relevant papers and reports.

### 2.2 Ageing

This section discusses the ageing of the population and the implications of the burgeoning numbers of this cohort.

#### 2.2.1 The changing landscape of the ageing population

Demographic trends indicate that the worldwide population is progressively ageing. Currently, the number of people over 65 years of age constitutes 6.6% of the world’s population, and this is expected to increase to 10% by 2025, amounting to 800 million people aged over 65 people globally (United Nations Population Division, 2002). In real terms this means by 2050 there will two older adults to every child. The anticipated dramatic increase in the number of older people has created a need to identify ways to improve health and well being of older people, as their morbidity
and associated health costs have become an important public health issue globally (Ministry of Health, 2004).

According to a report by the Ministry of Health (2002a), in New Zealand people over the age of 65 years make up 12.4% of the population, with an expected overall increase to 25% percent by 2051 (Ministry of Health, 2002a). Demographical data shows that our ethnic population is also ageing. By 2051, Māori and Pacific older people will increase by 10% and 4.4% of the total population respectively (Statistics New Zealand, 2004). Given the incidence and prevalence of chronic diseases in Māori and Pacific people at a younger age, the demands on health services and social supports for older people and whanau will have a major impact in the future (Ministry of Health, 2004).

In common with projected trends from other international countries, the proportion of New Zealand older population over 75 years of age will significantly increase over the next two decades, with the baby boomers reaching their 80th birthday by 2035 (Ministry of Health, 2002a). The predicted demographic changes for those aged 75 years and over are significant. In New Zealand there is expected to be a fourfold increase in this age group in the next 20 years, making the health of older people an important public health issue (Statistics New Zealand, 2004). The number of people aged 85 years and over will account for 24% of those over age 75 years compared with 11% in 2005. Within this age group, people are traditionally more likely to move to residential care as a consequence of their inability to remain independent in their own home, due to chronic ill health or disability (Dwyer et al., 2000). Currently 22% of those aged 85 and older live in residential care in New Zealand (Ministry of Health, 2002).

These trends are reflected internationally making this the fastest growing sector of the world’s population (United Nations Population Division., 2002). Countries such as the United States of America, Europe and United Kingdom will continue to see an increasing aged population. In contrast, Japan is presently experiencing its bulge of aging older people, which has placed considerable strain on existing community and
long term care support services (MacKellar, Erromolieva, Horlacher, & Mayhew, 2004).

2.2.2 Implications of burgeoning ageing population

The predicted population growth will have significant implications for society and the economy (Ministry of Health, 2004). The ‘compression of morbidity and mortality’ was proposed by James Fries in 1980. He postulated that survival curves between 1900 and 1980 were becoming closer due delays in chronic disease and a slowing down of the increase life expectancy in the United States. This seminal report proposed that compression of mortality paradigm survival, due to life style changes and medical advances, would result in shortened end of life cares rather than the need of health care across the life course (Fries, 1980). The compression of morbidity relies on the assumption that the onset of chronic diseases, usually the most common cause of ill health, is postponed due to healthy life style choices and medical interventions occurring at a faster rate than the increasing life expectancy. A long life relatively free of morbidity would be ideal until a time close to death. For example, initiatives that have reduced cardiovascular disease have also contributed to a differential active life expectancy rate in a number of developed countries (Manton, 1982).

Independent life expectancy (the average number of years free of disability requiring assistance) may be reduced in the young-old population; however for those over the age of 80 years a significant percentage of individuals have difficulties with both activities and instrumental activities of daily living because of reduced mobility. Targeting locomotor disorders would give a life expectancy gain of 0.02 years but more importantly a disability free gain of 5.1 years (Manton et al., 1994).

In New Zealand, physical disability was reported as the main form of disability by people over the age of 65 (Statistics New Zealand, 2004). Currently nearly 55% of older people with disabilities have been disabled for 10 years or longer (Statistics New Zealand, 2004). An inability to live independently due to physical disability and functional decline is a predictor for entering residential care, and the risk increases
exponentially with age (Dwyer et al., 2000). This is confirmed in figures released by the Ministry of Health in 2004, which showed that people aged 80 and over account for 69% of total residents.

Internationally however, projections of those over 65 years who are disabled are mixed. Jagger (1993) report a fall in the rate of disability in the United States and Spain, in contrast to Sweden which shows an increase in disability. Some argue that an overall understanding of disability trends in the future is hampered by a lack of good evidence (Wanless, 2004). International comparison of total and disability free life expectancy shows considerable variation, with women living with disability longer than men. In actual life expectancy figures, females are expected to outlive their male counterparts by five years; however, for those males who reach the age of 80 this levels out, and from 85 years the gender differences are marginal with men living almost as long as women (Dwyer et al., 2000).

One of the main concerns associated with the ageing population is the need for more residential care. The demands affected by an extended life expectancy have seen an increase in the number of older people entering residential care. In response to both the burgeoning of long term residential care for older people, and present day rehabilitation principles worldwide, an emphasis on promoting health and independence in those in residential care is encouraged. This thesis addresses the question of whether functional activity programmes can impact health status and quality of life of older people living in residential care in New Zealand.

The impact on the function of an older population by an improvement in physical mobility could be significant (Fiatarone-Singh & Mayer, 2002). If there is no reduction in morbidity and disability the concomitant increase in the numbers of older people may overwhelm available services. To date, no New Zealand research on improving physical function using a rehabilitation programme for older people in residential care appears to have been completed. This study seeks to fill this gap.
2.2.3 Health utilisation and expenditure

Compared to the total population, older people in New Zealand are high users of health and disability support services (Ministry of Health, 2002a). Total health expenditure in 2002/03 was estimated to be around $6850 million, with approximately 39% of that spent on the health of people aged 65 and over. Health expenditure increases exponentially with age, with older people over the age of 85 using 2.7 times that of their younger cohort aged 75-84 years (from $6863 for those aged 75-84 years compared to $18,530 for those over the age of 85 years) (Dwyer et al., 2000).

Conclusions from international literature clearly indicate that the New Zealand experience is in line with overseas experiences of increased health expenditure and demand as the population ages, due to the increased incidence of cardiovascular disease, diabetes and diabetes related disorders, chronic respiratory diseases, muscular skeletal diseases, and hip fractures (Dwyer et al., 2000; Robine & Rogers, 1991). If the relationship between health status and age do not change there is little doubt that the ageing of the population will put increasing pressure on health expenditure. An increase in life expectancy without associated reduction in chronic disease and disability will clearly increase the pressure on the health dollar.

2.2.4 Health utilisation and expenditure in residential care

Internationally, forms of custodial care have been available to older people in developed, and to a lesser extent undeveloped, countries for many decades. In the 19th century, poor older people who needed care tended to be incarcerated in the state run ‘poor house’ (Koopman-Boyden, 1992). Now in the 21st century, internationally and in New Zealand the range of supportive type accommodation for the older person is greater and includes retirement villages, rest homes, continuing care hospitals and specialised dementia units. Such facilities can be maximised on the same site, or as stand alone institutions, and are run as charitable trusts, not for profit or profit institutions (Koopman-Boyden, 1992).

Health utilisation and expenditure and demand for residential care has been estimated at 33% of the total disability support budget or $426 million per annum.
This increase in expenditure for residential care over the last five years has been the main contribution to growth in utilisation in New Zealand (Ministry of Health, 2004). By comparison, United Kingdom data for total private expenditure on care homes fees is less reliable due to complicated social and health funding schemes under the National Health Service (Bowman, Whistler, & Ellerby, 2004). While extracting financial costs from Australian data is also problematic primarily due to state and federal funding policies there appear to be similar costs when compared to the New Zealand private sector (Australian Institute of Health and Welfare, 2007).

### 2.2.5 The demographic profile of older people in residential care

When compared to international data residential care utilisation in New Zealand ranks eighth highest with 6.7% of people over the age 65 living in residential care (Ministry of Health, 2002a). The majority of older people are of European/New Zealand descent (94%), with relatively low numbers of other ethnic groups including Māori (2.7%), Pacific peoples (0.4%), and Asian peoples (0.4%) (Ministry of Health, 2002a). Australia has a slightly lower percentage than New Zealand with 5% of the population over 65 years living in residential care, which is comparable to utilisation in United Kingdom and United States (Ribbe et al., 1997). Australian data on ownership of residential care facilities is extrapolated from subsidized residential care beds, of which 31.2% are provided by for-profit organisations, 7.8% by state or local government, while the remaining 61% are provided by non-profit and/or religious based facilities (Australian Institute of Health and Welfare, 2007).

Of the total New Zealand population of older people currently in residential care, 14% are aged 65-74 years, 35% are aged 75-84 years, 43% were aged 85-94 years, and a small but growing population of 8% are over the age of 95 (Ministry of Health, 2002a). Table 1 shows actual bed numbers in 2002 as well as numbers of people in the four types of facilities available in New Zealand.
Table 2-1: Older people in residential care by age group and type of care

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Rest Homes (number of people)</th>
<th>Long-Stay hospital (number of people)</th>
<th>Dementia units (number of people)</th>
<th>Psycho geriatric units (number of people)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-69</td>
<td>1,324</td>
<td>560</td>
<td>113</td>
<td>61</td>
<td>2058</td>
</tr>
<tr>
<td>70-74</td>
<td>1,964</td>
<td>1,298</td>
<td>308</td>
<td>121</td>
<td>3691</td>
</tr>
<tr>
<td>75-79</td>
<td>4,259</td>
<td>2,444</td>
<td>672</td>
<td>215</td>
<td>7590</td>
</tr>
<tr>
<td>80-84</td>
<td>5,289</td>
<td>3,782</td>
<td>948</td>
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<tr>
<td>85-89</td>
<td>6,135</td>
<td>4,140</td>
<td>766</td>
<td>193</td>
<td>11,234</td>
</tr>
<tr>
<td>90+</td>
<td>5,708</td>
<td>3,943</td>
<td>472</td>
<td>143</td>
<td>10,266</td>
</tr>
<tr>
<td>All Ages</td>
<td>24,679</td>
<td>16,167</td>
<td>3279</td>
<td>985</td>
<td>45,110</td>
</tr>
</tbody>
</table>

Source: Ministry of Health, 2002a

Demographically worldwide, the rate of institutionalisation has been shown to increase for women slowly until age 80, at which point it rises exponentially (Jacobzone, Cambois, & Chaplain, 1998). Australia and New Zealand both report a 31% increase of those aged 85 years and over entering residential care, compared to 7% of those aged 75-84 years (Australian Institute of Health and Welfare, 2007; Ministry of Health, 2002a; Statistics New Zealand, 2004). Women’s longer average life expectancy may influence their use of institutional care as will the impact of severe disability for those who survive to older old age (Manton et al., 1994). In addition women over 85 years are less likely to stay at home following the death of a spouse. In essence, the pattern of utilisation for women may reflect later entry to residential care with higher levels of disability compared to men (Bonita, Broad, Richmond, & Baskett, 1990). In contrast, only 5% of men were in residential care at the age of 85 years (Bonita et al., 1990).

This would indicate that on the whole physical disability may be the most common reason older people moving into residential care; figures show that 91% of those in residential care have some form of physical disability (Ministry of Health, 2001a). In New Zealand dependency levels reflect the degree of disability that an older person may have on entry to residential care. Generally older people on admission to a
residential care facility have a moderate to severe disability affecting their mobility. Walking to the shower or climbing stairs was recorded as the most difficult activity, with getting out of a chair or off the bed being reported as somewhat difficult for those admitted to residential care (Ministry of Health 2006). In contrast, a recent Australian survey ranked difficulties in self care higher than mobility tasks in the 2005 Australian Institute of Health and Welfare residential care survey (Australian Institute of Health and Welfare, 2007).

The ageing demographic profile with the associated increasing costs of health care and potential demand for residential care highlights the need to develop ways of reducing costs and demand. Next we consider the health issues that contribute to wellbeing and need for services.

### 2.3 Health in old age

This section discusses the health and functional status and physical function in ageing, the prevalence of disability, and explores the relationship between frailty, dependency and poor physical activity.

Life expectancy generally reflects the average number of years that a person of that age can expect to live if current mortality rates persist for the rest of their lives (Robine & Rogers, 1991). All hospitalisations and mortality rates for cardiovascular disease, ischemic heart disease and stroke are significantly higher in older age groups (Ministry of Health, 2002a). The prevalence of chronic respiratory disease, diabetes and arthritis among older people is almost double that of younger people. Compared with their younger counterparts aged between 50-64 years, females 75-84 years were four times more likely, and males of the same age were over three times more likely, to have four or more chronic conditions (Ministry of Health, 2002a).

The literature highlights that these chronic conditions, combined with the complexities of advancing age, co-morbidity and potential frailty, require improvements in the ways they are managed in the current health system (Herbert, Brayne, & Spiegelhaltr, 1997). The impact of living with multiple chronic conditions
has been shown to have a negative impact on general health and vitality, commonly termed health status, for people aged 85 years and over, particularly when associated with lower social functioning (Fried, Bandeen-Roche, Kasper, & Guralnik, 1999). People aged 85 years and over in residential care had significantly lower self-reported health status in general health, mental health and overall well-being than those older people living in the community.

The impact of being less physically active combined with a number of comorbidities has been shown to be a predictor of institutionalisation (Manton, 1988) and more importantly is highly associated with frailty and functional dependency for residential dwelling individuals (Gillen, Spore, Mor, & Freiberger, 1996; Rockwood, Stolee, & McDowell, 1996). Clearly chronic disease can lead to an increase in individuals’ vulnerability to stressors and a greater risk of developing disability and frailty.

2.3.1 Functional status and physical function in ageing

Functional status is considered the most relevant clinical outcome for older people, and this group highly value functional health (Noro & Aro, 1996; Thomas, 2001). The review of literature examining functional status describes this as the ability to perform both basic activity of daily living tasks and instrumental activities of daily living.

Functional status is a more general measure and tied more closely with disability than physical function. Physical function is mostly related to physical disability with age and chronic health conditions such as heart failure, diabetes and osteoarthritis as main contributors (Ettinger, Davis, Neuthaus, & Mallon, 1994; Ferrucci, Guralnik, Pahor, Corti, & Havlik, 1997). A change in functional status is defined as functional decline. The annual incidence of functional decline in older people age 75 years is reported to be 11.9% of older people who become disabled. Rates of functional decline in older people internationally are comparable to New Zealand’s experience.

The presence of impaired functional status represents a marker for a number of poor outcomes, including mortality in older people (Manton et al., 1994). Older people
‘will live with, rather than die of’ functional decline that accompanies chronic disease’ (Rejeski & Brawley, 2006: 94). It is level of function however that is closely related to expenditure, hospitalisation and death. Functional status is highly correlated with health status for older people, both community dwelling older people and those frailer older people in residential care (Ministry of Health, 2004). It makes sense that maintaining optimal functional status should be a major goal for older people. Those with chronic conditions are more likely to be sedentary than their healthy counterparts. Sedentary behaviour is caused by the exacerbation of both physiological and structural systems that are inherent with ageing (King et al., 1992). Older people in residential care are more likely to have four or more chronic conditions, reduced physical activity, a physical disability and much more sedentary than community dwelling older people (Foley, Ostfeld, Brahch, & Wallace, 1992).

Factors underlying functional decline in old age are multiple and vary between individuals and populations (Jagger et al., 1993). A Canadian two year longitudinal study on a representative sample of community dwelling older people over 75 years found that just over one third of older people who presented with some form of functional decline recovered their function (Herbert et al., 1997). This finding supports early results showing that functional decline improved in 22% of their study population (Jagger et al., 1993). In contrast, an observational study comparing physical activity levels and functional status in nursing homes found a correlation between low levels of physical and functional decline (McRae et al., 1996).

A further study assessing functional status among nursing home residents (n=9,541), derived from a sample of newly admitted nursing home residents in the United States over a five year period, found that changes in functional status were experienced by 51% of residents. Interestingly this change in functional status was fluctuating rather than progressing to a permanently lower level of function (Gillen et al., 1996).

Understanding that functional status fluctuates among older people in residential care suggests that individuals with poor functional status should not be precluded from
attempts physical activity and exercise programmes to improve overall function in activities of daily living (Rejeski & Brawley, 2006).

2.3.2 Prevalence of disability

There is an increased prevalence of disability with age (Campbell & Buchner, 1997). Disability is defined as ‘a restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being’ encompassing a wide number of domains: social, emotional and sensory (Jette, 1997).

A large international prevalence survey of disability found that 16% of those aged 65 years and older had difficulty with mobility-related activities and 12% had difficulty with basic activities of daily living (Guralnik, LaCroix, & Abbott, 1993). Slow walking speed is reported to predict need for help, institutionalisation and mortality among older people (Guralnik et al., 1993).

The prevalence of disability among all people aged over 65 years in New Zealand also increases with age. According to a 2001 New Zealand household disability survey, 36% of people over the age of 75 years and older experience a moderate disability requiring some assistance with either activities of daily living or instrumental activities of daily living or special equipment such as a walking frame. 18% of these older people have a severe disability requiring assistance daily (Statistics New Zealand, 2001b). The disability survey in residential care reported a higher level of disability and a higher prevalence of multiple disabilities (more than one activity limitation) than people of the same age range living in the community (Statistics New Zealand, 2001a, 2001b). Severe disability was reported in 72% of the 65-74 group and 82% of those 75 years and older in residential care (Statistics New Zealand, 2001a).
Table 2-2: Prevalence of disability severity among people, by sex and age

<table>
<thead>
<tr>
<th>Gender</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>45-64</td>
<td>65-74</td>
</tr>
<tr>
<td>Mild</td>
<td>10.8</td>
<td>17.8</td>
</tr>
<tr>
<td>Moderate</td>
<td>9.0</td>
<td>18.4</td>
</tr>
<tr>
<td>Severe</td>
<td>2.8</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Source: Older People’s Health Chart Book, 2006)

The New Zealand Disability Survey shows that older people living in residential care have a higher prevalence of the inability in performing both ADL and IADL’s compared to those living in the community (Statistics New Zealand, 2001a, 2001b).

A recent prospective cohort study which aimed to determine the rates of clinically meaningful transitions in mobility/disability status clearly showed that mobility/disability is a highly dynamic process (Gill, Allore, Hardy, & Guo, 2006). It was characterized by frequent transitions between being independent and dependent as the result of changes in the individual’s disability status. Being older, female and physically frail increased the likelihood of transitional episodes. Using walking as an example; one participant experienced three consecutive months of disability in walking a quarter of a mile, followed by two months of independence, followed by a further four months of disability before transitioning back to independence (Gill et al., 2006).

Researchers conducting a study in the Netherlands, using data from GLOBE that included community dwelling and institutionalised populations, reported that disability in general is a dynamic, non-linear process and drew similar conclusions to other disability studies. Specific findings included that age and presence of heart disease, asthma/COPD and back complaints were significantly associated with trajectories of disability (Nusselder, Looman, & Mackenbach, 2006).
Nagi (1965) developed a disablement model that can be used to evaluate the effectiveness of interventions that prevent or slow down the progress on the disability. Verbrugge and Jette (1993) further developed the model, stating it is the consequence of functional limitation combined with physiological changes in ageing. They incorporated internal and external factors such as psychosocial factors and lifestyle.

An understanding of the disability risk factors not only allows consideration of options to prevent disability but also identifies those at high risk of developing a disability. Further it allow for the development of interventions that interact at a number of levels to prevent or slow down the progression from functional limitations to disability. Habitual physical activity has been found to be an independent predictor of duration of recovery to become independent in ADL function, among newly disabled community dwelling older people (de Vreede et al., 2004). Further trials are required to explore the effectiveness and feasibility of an intervention that may prevent or reverse functional limitations and disability in sedentary older adults (Conn, Minor, Burks, Rantz, & Pomeroy, 2003).

### 2.3.3 Frailty

Older people in residential care in New Zealand are often described or diagnosed as being frail. Does this diagnosis influence perceptions of older people’s ability to be physically active once they are in long term care? The literature exploring frailty and aging is complex and discursive (Rockwood, Foz, Stolee, & Robertson, 1994). A recent systematic review suggests that to some degree frailty needs to be defined in the context in which it is being used. For instance, a combination of ‘biological’ aging, high burden of chronic disease, malnutrition and extreme sedentariness commonly seen in older people in residential care have been found to be primary contributors towards physical frailty in this population (King, 2001; Mazzeo et al., 1995).

Normally, an individual is able to adapt to the demands of everyday life without loss of function even at times of ill health, but if the decline in mobility, muscle mass, strength, balance and cardiovascular function is great then the risk of physical frailty
increases significantly according to Fried (2004). Furthermore, both frailty and co-morbidity predict disability, while disability may exacerbate frailty (Fried, 2004).

There is a remarkable similarity between losses in strength due to ill health and from physical inactivity causing frailty in the older person (Buchner et al., 1997; Ferrucci et al., 1996; Jette, Branch, & Berlin, 1990) The mechanisms responsible for older people becoming frail and dependent are complex, but when older people maintain physical activity, the losses in upper and lower body strength with age are reduced substantially (Jette & Branch, 1981).

Several studies have reported similar findings, suggesting that activity programmes that are sustainable will improve physical health and decrease frailty (Jette & Branch, 1981; Petrella, Miller, & Cress, 2004; Rockwood et al., 1996). Gill (2002) explored frailty in a prospective study in the United States involving 754 older people aged 70 years and over. This later study explored the relationship between hospitalization, restricted activity and the development of disability. When controlled for the presence or absence of disability the results showed that physical frailty, illness and inactivity were more likely to cause disability (defined as the inability to perform activities of daily living) than physical activity alone (Gill et al., 2002). This suggests that physical activity programmes will need to take into account individual health risk factors when they are delivered and evaluated (Fried et al., 1999).

This research recognises the limitations of current physical activity research and acknowledges that disability remission rates are much lower than rates of acquisitions (Manton et al., 1994; Mor, Gifford, Morris, & Moore, 2002). One way to overcome these problems is try new ways to intervene with the ‘associated remission trajectories’ that take place with older disabled individuals. Interventions that examine functionally oriented physical activity programme may provide the way to improve long term functional ability for older people in residential care. Having established physical activity as an important protective and rehabilitative factor in forestalling disability and improving physical function, we will now examine the literature more specifically related to physical activity.
2.4 Physical activity and older people

This section reviews the literature that relates to physical activity and its impact on the health of older people. The effects of physical activity and exercise on specific outcomes such as physical performance, health status, and health-related quality of life are discussed. Literature relating to patterns of physical activity and exercise, moderating and mediating factors, will be explored.

2.4.1 Introduction

Literature on physical activity is prolific with descriptions and definitions of physical activity. Physical activity is commonly acknowledged as being “any bodily movement produced by skeletal muscles that result in energy expenditure” (Centre of Disease Control and Prevention, 1995). Physical activity includes planned activity such as walking, running, or playing sport and habitual activity as part of occupational or leisure activity (King et al., 1992). Exercise is used to describe a specific type of physical activity that involves,

“Planned, structured and repetitive bodily movements done to improve or maintain one or more components of physical fitness”

Centre of Disease Control and Prevention, 1995

Academics, researchers, and clinicians continue to explore what physiologically makes an older person get fitter. Is it the improved fitness or the physical activity that is responsible for the health improvements? A systematic review of prospective studies on physical fitness found conflicting evidence for an association between increases in fitness and decreased mortality (Blair, Kohl, Gordon, & Paffenbarger, 1992). This influential review also found a continuous dose response relationship between physical activity and health, with greater health benefits seen with higher levels of physical activity. Other studies investigating the effects of low and moderate intensity physical activity interventions found that there were no significant differences in health outcomes between the low and moderate intensity group (King, Haskell, Taylor, Kraemer, & DeBusk, 1991).
What is less known is whether improvements in older people’s physical and psychological health and well being is due to biological changes, which may in fact be different from those responsible for improvement in physical fitness. Di Pietro (2001) argues that in a health context, the difficulties lie in describing and measuring change over time in this population, and can be even more complex and difficult in older populations with chronic conditions. Regardless of the equivocal evidence, getting older people involved in physical activity should be encouraged, including those living in residential care, as the modest gains even for frail and the old old may make the difference between transferring to the toilet independently or not or getting on and off the bed safely (Fiatarone-Singh & Mayer, 2002).

Strong epidemiological evidence shows that participation in physical activity is associated with positive benefits that contribute to healthy ageing, even for the very frail older person (Blair et al., 1992; Mazzeo et al., 1995). These benefits include longevity (Bortz, 1984), cardiovascular health (Shephard, 1989), reduction in type 2 diabetes, osteoporosis (King, 2001), depression and anxiety (Simons & McCullum, 1996). There is some evidence that physical activity prevents or delays cognitive impairment and disability and improves sleep disorders (King, 2001; Rejeski & Mihalko, 2001). Several studies have shown the protective effect of physical activity on functional limitations, with exercise both preventing and lessening functional limitations (Ettinger et al., 1994; Jette & Branch, 1981).

Amongst older people where the risk of falls is greatest there is substantial evidence that physical activity reduces the overall risk of falls and injuries from falls in community dwelling older people (Robertson, Campbell, Gardner, & Devlin, 2002) as well as those in residential care (Myers, Young, & Langlois, 1996). Designing interventions that are pragmatic in their approach to improving function and quality of life requires knowledge not only of physical activity or exercise programmes frail older people participate in, but also what influences their participation.

2.4.2 Influences on older people’s physical activity
Understanding factors that influence older people to participate in physical activity is one focus of this thesis. What has and has not worked in previous studies, and what
encourages older people to be physically active, will inform the intervention. It appears there are a number of causal factors that influence older people to initiate and maintain physical activity (Crombie et al., 2004; King et al., 1992).

In 1992, King et al. undertook a large review exploring determinants of physical activity across cohorts, including older adults. On the whole these studies tended to be cross sectional rather than prospective studies making it difficult to report potential causal relationships between influential factors and physical activity participation. Nevertheless, King endeavored to provide insights into particular determinants that may influence physical activity participation by older adults (King et al., 1992).

These determinants include gender, with women taking less part or interest in physical activity (King et al., 1992; Lee, 1993). Lack of previous experience of physical activity by women may also be associated with lower levels of participation in physical activity (O'Brien & Vertinsky, 1991). This is supported by other physical activity studies showing that some older people will pursue physical activity as a (new) lifestyle choice, while others continue physical activity that is part of their past history for example golf, walking or swimming (Dishman, Sallis, & Orenstein, 1985).

There are a large number of influencing factors that can be found in the psychological, social and behavioural categories which have gained increasing support for their association with physical activity (Dishman et al., 1985; Lim & Taylor, 2005). Self efficacy, a social cognitive theory, states that beliefs influence the choices people make and the courses of action they pursue (Bandura & Schunk, 1981). Individuals tend to engage in tasks about which they feel competent and confident and avoid those in which they do not (Brandtstaedter, Rothermund, & Schmitz, 1998). Efficacy beliefs also help determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will be in the face of adverse situations (Schank & Abelson, 1977). Self efficacy has received the strongest support in virtually every study that includes it (Sallis & Owen, 1999). It appears to mediate the effects that factors such as social
support (McAuley et al., 2000), motivation (Kavussuanu & Roberts, 1996) and self esteem (McAuley, Shaffer, & Rudolph, 1995) have on physical activity.

Studies have also determined the association of self efficacy when health professionals or trainers support physical activity participation (Lim & Taylor, 2005). In an intervention designed to improve self efficacy and physical activity in older adults after a cardiac event, the two treatment groups received one of two supportive telephone protocols that involved either theory-based self efficacy coaching or attention control. The self efficacy intervention was effective with greater physical activity in the intervention group. Self efficacy was significantly correlated with measures of physical activity, using a self reported performance of a six minute walk (Allison & Keller, 2004).

A resistance training programme coupled with an empowerment intervention, specifically designed to reinforce the competencies and desires of older individuals for physical strength, showed that, with additional positive feedback mechanisms, a trend towards larger gains in self efficacy were seen (Katula, Sipe, Rejeski, & Focht, 2006). Gains in lower body strength efficacy were larger for the empowerment group, with a mean adjusted change standard error of 12.09 (3.70), compared with 4.26 (3.90) for the control group. General linear regression model analyses did not reveal statistical significance for the change in upper body strength efficacy, with a moderate effect size 0.63 (Katula et al., 2006). The results of this study demonstrate the potential value of adding a self efficacy component to physical activity interventions, allowing older people to recognize their strengths and competences.

According to Rejeski and Focht (2002) older adults often need extra guidance and motivation in developing self regulatory skills. While guidance and motivational techniques have been proven to be effective with community dwelling older people, shown by an association between improved function and physical abilities less is known about what influences older people in residential care to be physically active (Rejeski & Focht, 2002; Stenstrom, 1994). There is a paucity of literature examining the effects of including a self efficacy component in physical activity interventions for older people in residential care.
Chapter 2: Literature review

The use of mental imagery to motivate the uptake of exercise has had positive benefits (Riccio, Nelson, & Bush, 1990). De Kuiper (1993) and Lang (2002) found that participants exercised more when engaged in activity with a real object compared to an imaginary one. The lack of good evidence suggests that further investigative research is required to determine which interventions engage and motivate older people in residential care in order to increase enjoyment and compliance.

2.4.3 Physical activity in frail and very old people

Until recently, physical activity and exercise programmes have been considered inappropriate for frail or very old people because of the lack of evidence to suggest benefits. However, in the last decade there has been increasing evidence that for this group of older people, exercise is safe as well as having the accumulative benefits that far outweigh past fears and low expectations of the overall benefits of physical activity (Fiatorone et al., 1994).

Physical activity in an older frail person has similar beneficial effects to those observed in fitter older people when participating in physical activity programs (Morris et al., 1999). In fact, Mazzero (1995) goes one step further and states that for vulnerable populations, including the very old and frail, a ‘target exercise prescription offers benefits that cannot be achieved with any other therapeutic modality’. Being very sedentary appears to be a far more dangerous condition than physical activity for very frail older people (Rydwik, Frandin, & Akner, 2004).

Increasingly, evidence indicates that loss of physical activity or fitness explains to some extent functional decline with age. Bortz (1984) postulates that until recently disuse in the older person was slow to be identified due to the protracted period over which an individual’s ‘redundant function’ was lost and functional impairment became apparent. Initially this led gerontology researchers to believe the effects of disuse were an inevitable part of the normal ageing process.

Most of the current knowledge on deconditioning comes from bed rest studies. Younger and older people were observed in prolonged periods of bed rest and showed steep declines in general physical fitness (Greenleaf, 1997). Prolonged bed
rest is similar to sustained sedentary behaviour. Evans (1995) demonstrated that many older people, due to their sedentary lifestyles, function dangerously close to the minimum ability level required for maintaining normal activities of daily living. This danger increases significantly for older people in residential care.

Similarly, cross sectional data from the Women’s Health and Aging study, with a sample of 1002 disabled community dwelling older women over 65 years, shows that a spiraling deterioration occurs for those with severe underlying disease (Guralnik, Fried, Simonsick, Kasper, & Lafferty, 1995). There is an association between age and co-morbidities for those with motor disability. Older women with a motor disability, with increasing age combined with knee pain, reduced overall physical activity, leading to deconditioning (Rantanen, Guralink, & Sakari-Rantala, 1999). To some extent this can be explained physiologically. Singh-Fiatarone (2002) demonstrated that older women’s initial muscle mass reserve is much lower than men’s, concluding that ‘gender differences in anabolic hormonal milieu as well as lifestyle factors’ (p. M263) was the causal factor. Similar results by Guralnik (1993) showed that women will cross the threshold where loss of musculoskeletal capacity will impact on functional status at least 10 years before their male counterparts.

Being sedentary is common in residential care, with muscle weakness and atrophy being the most common consequence of this lack of physical activity (Mulrow, Gerety, Cornell, Lawrence, & Kanten, 1994). They postulate that reduction in physical activity causes deconditioning associated with increased time spent sitting or lying down, rather than with decreasing muscle mass and strength. Studies have found that a considerable amount of an older person’s time in residential care is spent sitting or lying down; this is caused by environmental factors (McRae et al., 1996), and care systems that create dependency (Barton, Baltes, & Orzech, 1980; Blair, Lewis, Vieweg, & Tucker, 1996; Feldman & Kane, 2003).

The benefits outweigh the negatives for frailer and older populations to participate in exercise or physical activity. These benefits include improved health status, muscle strength, aerobic capacity, and reduced fracture risk (Christmas & Anderson, 2000). Furthermore, a significant impact on maintenance of quality of life and overall life
satisfaction is associated with physical activity in this population (Mihalko & McAuley, 1996; Rajeski & Mihalko, 2001). Being functionally independent is a high priority for older people and the benefits of increasing habitual exercise can assist older people in maintaining functional performance (King et al., 1992), even for those in residential care (Galloway & Jokel, 2000).

Targeting interventions for frail older people in residential care makes sense when you consider that, on the whole, this group of people have deconditioned following an acute health problem requiring hospitalisation (Ministry of Health, 2002a) or experienced a marked reduction in independence prior to entry (Weatherall, Slow, & Wiltshire, 2004). Exploring the reasons why physical inactivity is important for older people in residential care is discussed in the following section.

### 2.4.4 Effects of physical activity and exercise on physical performance

Old muscles can be retrained (Fiatarone et al., 1990; Frontera, Meredith, O'Reilly, Knuttgen, & Evans, 1988). Contrary to long held beliefs, older individuals are just as capable of improving their cardiovascular fitness, muscle strength and flexibility as younger groups when enrolled in supervised exercise programmes (Brown, McCartney, & Sale, 1990; Fiatarone et al., 1990; Moritani & DeVries, 1980). Muscle strength declines with age so by the time an older person reaches his/her 80th birthday there is about 40% less strength in the muscles than in their twenties (S. Brooks & Faulkner, 1994). Being inactive or suffering from a debilitating disease appears to exaggerate the age related decline in strength (Sager, Franke, & Inouye, 1996). Compared to older individuals with normal muscle mass, men and women with sarcopenia have 4.1 and 3.6 times higher rates of disability respectively (Guralnik, Ferrucci, Simonsick, Salive, & Wallace, 1995).

There is sufficient evidence in healthy older people to show that balance declines measurably in advanced age (Studenski et al., 1994; Tinetti, Speechley, & Ginter, 1988). These declines involve the sensory system related to balance (Lord, Clark, & Webster, 1991). Touch/pressure sensation on plantar surface, joint position sense, visual acuity, visual edge detection and vestibular input are reduced (Lord & Ward, 1988).
The effects of strength training, balance and endurance on older people are addressed sequentially in the following section.

### 2.4.5 Effects of exercises on strength

Strength training is the most common intervention reported in the literature. Many studies have shown large increases in the muscle strength of older people when their muscles overload most commonly using a progressive resistance training approach (Fiatarone et al., 1990; Frontera et al., 1988). Studies reporting positive strength training outcomes strongly correlated with improved functional outcomes (Judge, Whipple, & Wolfson, 1994). Nelson et al. (1994) showed significant improvements in physical function following six months of home-based strength and balance training in older subjects reporting functional impairment prior to the study. The exercise group experienced a 26% improvement in physical function. These findings support the importance of targeted exercise programs both for preventing functional decline and improving physical abilities with age (Nelson et al., 1994).

In the literature reporting strength training interventions for older people in residential care, very few studies discussed the findings as a preventive measure rather than as a response to decline. In a classic randomised control trial Fiatarone and colleagues (1994) studied the effect of progressive resistance exercise and/or nutritional supplementation on muscular strength and function in 100 frail nursing home residents over a 10 week period. Muscular strength increased by 113%, gait speed by 12%, and stair climbing power by 28% in the group that received exercise training intervention (Fiatorone et al., 1994).

Following strength training, further positive change can be observed in older people in the performance of basic activities of daily living such as mobility, dressing and transferring from a chair. For instance, Nichols (1995) showed an 11% decrease in stair climb time with an increase of 26% in balance as a result of 14 weeks of strength training. Participants with the lowest baseline scores showed marked improvements in function, reinforcing that the greatest gains of improvement are seen in sedentary individuals and those who are frail (Gill et al., 2002).
Apart from functional improvements, strength based training benefits have included improved flexibility and aerobic capacity (Nelson et al, 1994). Suggestions have been made that strength based training may act as a buffer to prevent disability in activities of daily living in older people with knee osteoarthritis (Baker et al., 2001; Thomas et al., 2002). Baker’s (2001) study of 46 community dwelling older individuals with knee osteoarthritis who participated in a four month physical activity intervention showed that the exercise group experienced significant reductions in pain and improvements in muscular strength, functional performance, physical ability, quality of life and self efficacy.

Similarly, Thomas (2002) randomised 786 women and men with knee pain to a strength training group plus phone calls, or control group who received phone calls or no phone calls, and found that the strength training group experienced significant reductions in pain and stiffness and improvements in physical function compared to the control group at the 6, 12 and 24 month time-points. These encouraging results have shown that older people are able to participate in strength training with minimal supervision provided they have a good understanding of gaining the most benefits from the strength training programme.

In a group of older adults who were questioned on their understanding of the best exercises to improve strength there was an overall misconception about the benefits of exercise. In a survey of 129 older people with a mean age of 77.5 years who responded to questions about their opinions, experiences and knowledge of exercise recommendations, 48 percent of participants were not aware that strength training increased muscle mass, whilst 49 percent of the participants were not aware of the need to increase weights rather than the repetitions in order to increase muscle strength, and 28 percent felt that walking was more effective than lifting weights at building muscle strength (Manini, Druger, & Pioutz-Snyder, 2005).

Furthermore older people appear to want meaningful improvements, as shown by a strength based training programme combined with psychological empowerment intervention (Katula et al., 2006). In this study participants were assigned to strength training exercise plus an empowerment intervention that included a self efficacy
component, while the control group was assigned strength training alone for six weeks. The results show that for upper body strength, the intervention group had a greater desire and self efficacy to enhance strength than those assigned the strength exercise alone. Participants in the empowerment plus strength training group were encouraged to observe changes in their functioning; consequently, they were more likely to notice their improved upper body strength and functioning for everyday activities such as carrying things and combing their hair. This observation was less evident when considering lower body muscles, possibly because it may take longer than six weeks to show a difference, or because participants may not have fully understood lower limb strength exercise principles (Katula et al., 2006).

Resistance training (i.e. exercises that involve muscles working against an external resistance) has shown gains in muscle mass and strength. A systematic review of progressive resistance training in older adults revealed that resistance training does in fact increase overall lower limb strength, as well as have a positive effect on several functional limitations in older individuals, but not on disability (Latham, Anderson, Bennett, & Stretton, 2007). Specifically, the review showed that progressive resistance training has a large positive effect on strength from the leg extensor group of muscles. A moderate-to-large beneficial effect was found with the standard deviation of 0.68 (95% CI 0.52 to 0.84) using a random effects model. Notably, the review proved that older people who had a pre-existing functional limitation made small gains in muscle strength. Overall muscle strength in older people has been shown to increase between 60 percent and 100 percent in response to training (Latham et al., 2007).

In summary, there is evidence that physical activity interventions can increase strength even among very frail populations, and emerging evidence suggests that this may reduce disability.

2.4.6 Effects of exercise on balance

Specific types of exercise have been designed to target specific functions. One of these specific areas is related to balance and falls. A plethora of studies have directed attention to exercise training and rehabilitation of balance disorders, aiming to
strengthen resistance against falls and improve an individual’s physical activity (Hu & Woollacott, 1996; Judge et al., 1994). Balance is affected by strength, vision, proprioception, reaction time and flexibility (Kiely, Karl, Burrows, & Fought, 1998; Lipsitz, Nakamima, Gagnon, & Hirayama, 1997). Exercise programmes that involve these areas may improve balance. Most trials of balance retraining have used a combined approach to exercise; only a small number of studies have used balance exercises alone making it difficult to compare trials as well as compare the dose response or the intensity. For instance, the Frailty and Injuries Cooperative Studies of Intervention Techniques (FICSIT) meta-analysis that included seven varying interventions, found that the overall effect of any kind of exercise training was a 10% reduction in fall rates in the subsequent year (Province, Hadley, Hornbook, Lipsitz, & Miller, 1995). The overall effect of balance training was even more significant on the fall rate, resulting in an overall reduction of falls by 17% (Province et al., 1995). Another isolated intervention in frail older people participating in balance training had no direct impact on functional status, although it did improve balance impairment (Tinetti, Baker, & McAvay, 1994).

A study of balance training by Wolf (2001) involved group Tai Chi exercises compared with individualised balance platform training and with an education control group. This study found that the participants who trained on the platform balance had less postural sway compared to the other two groups. The Tai Chi group also had reduced fear of falling and fewer falls, whereas the balance platform training had no effect on these endpoints. This highlights the difficulty of interpreting changes in continuous physical performance scores with regard to safety and functioning in daily activities. A recent meta analysis of four randomized controlled trials of lower limb strategies and balance strategies provides convincing evidence that the effects of exercise not only improved falls but also reduced injuries (Robertson et al., 2002).

Factoring balance exercises into any physical activity intervention for older people in residential care appears to be extremely important, when one considers that older people in residential care are five times more likely to fall than community dwelling people of similar age (Norton, Galgali, & Campbell, 2001). Balance training in the
form of Tai Chi, which challenges postural control, has been shown to improve balance and reduce fall rates in community dwelling older people (Wolf, Barnhart, & Kutner, 1996). This study’s original design included a sample of older residents; however, this has been unable to be replicated in residential homes due to time constraints and availability of staff to support the programme.

On the other hand, a different and more successful implementation of a Tai Chi programme in residential care aimed at improving balance found that both the intervention and control arm improved balance significantly (Choi, Moon, & Song, 2005). Further novel studies have targeted balance interventions in residential care that include whole body vibration and the use of a force platform with visual feedback (Bruyere & Wuidart, 2005; Sihoven, Sipila, & Pritti, 2004). Both interventions were able to show a significant improvement in balance compared to the control group.

Delivery of individualised, combined, or group training to improve balance has been used. Strength training alone also appears to have a modest effect on balance. Further exploration of this premise will be presented in section three where effects of physical activity interventions in residential care are reviewed in a systematic way. When designing interventions careful consideration must be given to factors that may potentially increase the risk of falls; the trade offs must be explored and discussed prior to participants enrolling in the intervention; and close monitoring must occur during the implementation phase.

### 2.4.7 Effects of exercise on endurance

Ageing is characterised by a loss of functional reserve capacity or a reduction in oxygen uptake (Kohrt & Brown, 2000). Cardiovascular endurance, determined by the maximal oxygen uptake (VO₂max) attained during exercise, is an index of an individual’s capacity for movement. VO₂max declines at a rate of 0.8-1.0% each year from 25 to 65 years of age. Thereafter, an accelerated decline may occur. VO₂max has been found to be 40% percent lower in older sedentary individuals compared to younger sedentary individuals, while trained older people can reduce this gap to 25% (Hagberg, Graves, & Limacher, 1989).
There is some evidence that much of the reduction of VO2max stems from a loss of muscle mass with increasing age (Kasch, Boyer, VanCamp, Verity, & Wallace, 1990). Subsequently, it is difficult to ascertain how much of the decline in VO2max experienced by ageing adults is inevitable, and how much of the decline is the result of a progressive decrease in habitual physical activity. The loss of cardiovascular function results in some functional consequences. The older person’s maximal oxygen uptake will progressively restrict the ability of the individual to undertake normal activities of daily living, such as walking or performing household chores. Some structural and functional changes can occur in older hearts as a response to exercise (Hagerman, Walsh, & Staron, 2000).

For exercise to improve performance, both the intensity and duration need to be at relatively high levels. For many older people these levels are not attainable, yet cardiovascular performance does appear to improve with even low levels of exercise, as demonstrated by Jirovac and Maxwell (1993) and McMurdo and Rennie (1993) in physical activity intervention studies on older people in residential care facilities. Two studies indicate that individuals with low aerobic capacity can improve cardiovascular fitness with the inclusion of strength training. The Fitness Arthritis and Seniors Trial provided some of the most reliable evidence about the effects of aerobic exercise on sedentary older people with osteoarthritis. Participants in this study undertook an 18 month walking programme, three times per week, at an intensity to increase the heart rate to over 50%. The participants in the intervention arm showed a significant increase in VO2max at the completion of the trial (Ettinger, Burns, & Messier, 1997).

When strength training was combined with treadmill endurance in the exercise prescription it showed modest benefits; however several other studies have shown that strength training had no effect on VO2max (Ettinger et al., 1994; Hagberg et al., 1989). Endurance exercise has been found to improve a number of physical performance tasks such as walking for six minutes, lifting a heavy load, getting in and out of a car and climbing stairs. Interestingly, there was also a reduction in the overall level of self reported disability among those in the intervention group (Hagberg et al., 1989).
One trial has shown that training at low intensity may produce modest improvements in VO$_2$\textsubscript{max} in frail older people which suggest that improving the health of sedentary or frail older people may not require high intensity exercises (Naso, Carner, Blankfort-Doyle, & Coughey, 1990). Fiatarone (2002) proposes caution when reviewing these findings as little is known about the ‘energy cost’ of activities for frail older people with joint deformities and gait disorders and those who use assistive walking devices. More trials are needed to determine whether lower intensity aerobic activities provide benefits in terms of physical performance and quality of life with reduced disability, without changing cardiovascular fitness to any degree.

2.4.8 Effects of physical activity and exercise on psychological health of older people

Reviewing the literature a myriad of operational definitions of the term psychological well being and psychological health can be found. However there, does appear to be a general agreement that psychological well being is a multifaceted phenomenon particularly for the ageing population (McAuley et al., 1995; Rajeski, Mihalko, 2001; Spirduso & Cronin, 2001).

The benefits of physical activity on psychological health has gathered increasing interest over recent years, which has lead to an increasing accumulation of evidence that supports and disputes the effects of physical activity on psychological health. Of the studies in this literature review reporting links between psychological and exercise, 38 evaluated the association between exercise and psychological wellbeing in people of all ages, and over half of these studies showed a positive association (McAuley & Rudolph, 1995).

Although there is good support in cross sectional studies for a relationship between physical activity and overall well-being, the evidence from intervention studies is limited and equivocal (Emery & Gatz, 1990; J. Keysor & A. Jette, 2001). However, the review by McAuley and Rudolph (1995) concluded that the overriding impression was one of positivity. They found that success was more likely with longer programmes, with exercise interventions lasting less than ten weeks tending to
have a less consistent effect on psychological well being. The position statement by the American College of Sports Medicine Position Stand on Exercise and Older Adults concludes “participation in a regular exercise programme is an effective intervention modality to reduce/prevent a number of functional declines associated with ageing” by improving the functional capacity of older men and women, thereby improving quality of life in this population (Mazzeo et al., 1995).

Netz (2005) found in their review that progressive resistance training had no effect on the well being of the intervention group, while Anent (2000) indicated that resistance training improved mood in older adults when compared with aerobic exercise. The reasons for conflicting results may be that both resistance and aerobic exercise interventions increase feelings of mastery and self efficacy, both potentially accumulating improvements in psychological well being (Blumenthal, Babyak, & Moore, 1999).

2.4.9 Psychological effects of physical activity on older people in residential care

Currently there is little reliable evidence that exercise is effective in improving quality of life in older people who participate in intervention trials in residential care (Forster, Lambley, Hardy, & Young, 2008). The available evidence suggests older people in residential care appear to enjoy strength training interventions to improve well being. Studies have demonstrated that strength training is beneficial to emotional health, and it has been suggested that it may be an important factor in preventing disability and early mortality (Chandler & Hadley, 1996).

Several studies measuring well being in residential care recorded depression as a primary outcome (Mulrow, Gerety, Kanten, & Cornell, 1994; Ouslander et al., 2005). A strength training programme designed to reduce symptoms of depressions found that participants with depressive symptoms at baseline had a reduction of depression following the intervention (Singh, Clements, & Fiatarone, 1997). An earlier study in a residential care setting found similar results (Mulrow et al., 1994). Residents who had reported greater depression at baseline also showed a greater improvement in response to physical therapy at the completion of the trial (Mulrow et al., 1994). The
paucity of evidence in New Zealand measuring the effects of exercise on improving psychological well being in older people in residential care highlights the need to conduct physical activity programmes measuring the effect not only on physical performance but also on physiological well being. The selection of clinically meaningful measures to determine the effect of the intervention on health related quality of life will be essential.

2.4.10 Effects of physical activity on health related quality of life and life satisfaction

It is well recognised that the focus of health care for the older person should not be restricted to increasing life expectancy, but also encompass measures aimed at improving or maintaining their health related quality of life. Health related quality of life (HRQol) has been defined by a number of commentators. Levine’s (1987) influential article argued that quality of life is emerging as a major criterion for evaluating health interventions, and that medicine has neglected the social dimension of health and illness. This paradigm shift has emerged as a consequence of the increasing number of persons with chronic illnesses who can be managed but not cured.

Over the last two decades, health related quality of life has had a myriad of definitions that explore and describe quality of life and health status in the older person. This has created confusion for researchers and clinicians. Published papers have dealt with quality of life in diverse ways, making comparisons difficult, and there appears to be a lack of precision operationally in defining quality of life (Farquhar, 1995; Rejeski & Mihalko, 2001).

In part the debate arises from researchers’ and health professionals’ understanding about what is important in relation to quality of life for older adults (Bowling, 1995). For instance, is quality of life for an older person living in residential care the same as that for a community dwelling older person actively involved in family, social and community activities? What quality of life means to older people was studied in the United Kingdom (Farquhar, 1995). This representative sample of older people participated in exploring definitions and measurements of quality of life.
Interestingly, older people themselves viewed quality of life in both positive and negative ways, believing that quality is not just about health but is linked to other components of life such family, social contacts and activities (Farquhar, 1995). The impact of exercise on quality of life was studied in a large sample of older people who took part in FICSIT (n=1,733, mean age 73.4 years) (Province et al., 1995). Results showed that those in the exercise intervention group experienced a small but significant improvement in emotional health, a trend toward improvement in the social component of the SF-36, but no effect on overall perception of general health as measured by the SF36. One suggested reason for these inconsistent results might well have been due the intensity, length and other practical aspects of the exercise programme. The lack of good evidence indicates the need for further exploration of the effects physical activity interventions have on quality of life and health status, particularly in residential care settings (Diener & Lucas, 2000).

Life satisfaction may be considered more relevant to this population, however results from randomised controlled studies on the effects of physical activity on life satisfaction are equivocal (Rajeski & Mihalko, 2001). Three studies found that older adults in residential care involved in physical activity reported improved life satisfaction when compared with a control group (Brill, Mason, Mustafa, & Macra, 1998; McMurdo & Rennie, 1994; Mihalko & McAuley, 1996).

A comparison of physical activity interventions that have measured life satisfaction and/or health related quality of life in community and residential care settings is presented in Table 3.
### Table 2-3: Randomised Controlled Trials of activity interventions showing improvement in Health Related Quality of Life in Older Populations

<table>
<thead>
<tr>
<th>Investigators</th>
<th>Country</th>
<th>Participants</th>
<th>Intervention</th>
<th>Measures</th>
<th>Major Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jette et al 1999</td>
<td>USA</td>
<td>215 adults with physical disability Mean age (75yrs)</td>
<td>Home based resistance training or wait list control group 3x/wk, 35 min FU 6mo</td>
<td>SIP (physical, psychological, overall disability) POMS (mood)</td>
<td>Exercise group reported 15% and 18% reduction in physical disability at 3 and 6 mo. No significant differences in mood, decrease in vigour at 3mo for exercise group.</td>
</tr>
<tr>
<td>Emery et al 1998</td>
<td>USA</td>
<td>79 adults with COPD</td>
<td>Assigned to 1. exercise aerobic and strength, 2. education stress management or 3. wait list control 5 wk daily 4hr 5 wk 3x/wk 60-90min FU 10wk</td>
<td>SIP CES-D (depression) STAI (anxiety) Hopkins symptom checklist</td>
<td>Significant reduction in depression for both exercise and control group. Significant reduction of anxiety in exercise group. Both groups reported reduction in physical disability.</td>
</tr>
<tr>
<td>Ettinger et al 1997</td>
<td>USA</td>
<td>364 adults with knee osteoarthritis Mean age (60yrs)</td>
<td>Assigned to 1. aerobic exercise, 2. resistance training 3. health education control group 3x/wk 60 mins FU 18mo</td>
<td>Self report of physical disability Knee Pain Scale</td>
<td>Both exercise groups reported less disability and knee pain than control. Exercise groups had a 10% and 8% lower adjusted mean on physical disability and a 12% and 8% lower score on knee pain respectively.</td>
</tr>
<tr>
<td>Singh et al 1997</td>
<td>USA</td>
<td>32 adults with minor or major depression Mean age (71yr)</td>
<td>Assigned to 1. Strength training programme or 2. attention control group 3x/wk 60min FU 10wk</td>
<td>SIP, SF-36 (general health status), GDS (depression), BDI (depression), Pil Geriatric Morale</td>
<td>Physical functioning, vitality, social functioning, role emotional and mental health scores improved in both groups. Exercise group significantly improved vitality, bodily pin, role emotional and social functioning than control group. Total morale improved in exercise group.</td>
</tr>
</tbody>
</table>
### Table 2-3 (cont): Randomised Controlled Trials of activity interventions showing improvement in Health Related Quality of Life in Older Populations

<table>
<thead>
<tr>
<th>Investigators</th>
<th>Country</th>
<th>Participants</th>
<th>Intervention</th>
<th>Measures</th>
<th>Major Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stewart et al 1997</td>
<td>UK</td>
<td>89 adults Mean age (77yrs)</td>
<td>Comparison group design by facility assigned to physical activity intervention or control FU 6mo</td>
<td>SF-36</td>
<td>Physical activity increased in intervention facility. Increase in self esteem in intervention group. Greater improvement in psychological well/being, greater reduction in depression and anxiety in activity group.</td>
</tr>
<tr>
<td>MacRae et al 1996 study 1</td>
<td>USA</td>
<td>37 nursing home residents</td>
<td>Delayed intervention in facility assigned walking programme or social visit control group 5x/wk 30min self selected pace FU 12 wk</td>
<td>GDS (depression) Bodily Pain Scale COOP chart of physical work</td>
<td>Walk endurance increased in intervention group. No significant changes in HRQL.</td>
</tr>
<tr>
<td>MacRae et al 1996 study 2</td>
<td>USA</td>
<td>30 residents</td>
<td>Both facilities in walking group 5x/wk 30min self selected pace FU 10 wk</td>
<td>GDS (depression) Bodily Pain Scale COOP chart of physical work</td>
<td>No significant changes in HRQL.</td>
</tr>
</tbody>
</table>

Notes. RCT = randomised controlled trial; SIP = Sickness impact profile; POMS = Profiles of Mood States; CES-D = Centre for epidemiologic studies-depression scale; HRQL = health related quality of life; GDS = Geriatric depression scale; BDI = Becks depression inventory; COOP = Dartmouth primary care cooperative information project physical work chart; SIP = Physical and psychological overall disability; Pil = Geriatric Morale Scale; STAI = Anxiety Scale; FU = follow up.
2.4.11 How much physical activity or exercise is enough?

In reviewing the literature concerning optimal prescription of physical activity/exercise training for older people, a number of factors need to be considered (King et al., 1992). Factors such as health status, personal preference, available time, equipment and facilities have been highlighted as relevant (Dishman et al., 1985). The plethora of successful physical activity interventions in community settings have provided a consensus on recommended number of training sessions and intensity required to achieve a basic goal of 40% to 80% increase in maximal heart rate (Mazzeo et al., 1995). Training sessions should occur three to five days a week, with duration of 20 to 60 minutes of near continuous aerobic activity for fit healthy adults.

Table 4 presents the recommended dose for the three most common exercise modalities to achieve maximum effect. Balance and flexibility training programmes can be delivered from a minimum of one session per week to seven sessions per week to have an observed effect (Fiatarone-Singh & Mayer, 2002). On the other hand, resistance training needs to be delivered at least twice weekly with an optimum of three sessions a week, with a maximum repetition of 8-12 to show a sustained effect (Fiatarone-Singh & Mayer, 2002).

2.4.12 Dose response for frailer older people

Many factors influence the response to exercise training. Important considerations include the type and dose of exercise, and the baseline health status of the participants. All these components may affect the degree of response and the treatment effects seen in trials (Haskell, 1994).

Studies have shown that sedentary older people can engage in some form of activity and that interventions should be developed that incorporate these activities (Blair et al., 1992; Haskell, 1994). The benefits of moderate versus low intensity exercise for older women, such as walking, found that low intensity exercise prescription provides an adequate training stimulus for older women who have previously been sedentary. This suggests that exercising at a lower intensity for a longer duration, using physical performance activities that avoid potential injury on joints and
progression, at a gradual rate targeted at an individual level, may also be effective at least in the short term (Lowenthal, Kirschner, Scarpace, Pollock, & Graves, 1994). Singh and Fiatarone (2002) suggest that it would be prudent to offer both structured exercise as well as incorporating elements into every day activities, in order to maximise the prescription.

For frailer, disabled older people, the emphasis is shifting from exercise or physical activity programmes that maximise cardiovascular gains toward designing physical activity programmes that aim to enhance the ability of older people to perform activities of daily living (DiPietro, 2001; M. Tinetti et al., 2002).

<table>
<thead>
<tr>
<th>Modality</th>
<th>Resistance Training</th>
<th>Balance training</th>
<th>Flexibility Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose</td>
<td>2-3 days/wk</td>
<td>1-7 days/wk</td>
<td>1-7 days/wk</td>
</tr>
<tr>
<td>Frequency</td>
<td>1-3 sets of 8-12 reps</td>
<td>1-2 sets of 4-10</td>
<td>Major muscle groups</td>
</tr>
<tr>
<td>Volume</td>
<td>8-10 major muscle groups</td>
<td>different exercises (emphasise dynamic postures)</td>
<td>1 sustained stretch (20 secs)</td>
</tr>
<tr>
<td>Intensity</td>
<td>15-17 on Borg scale 10 each rep, 1 min rest between sets</td>
<td>Progress difficulty as tolerated</td>
<td>Progressive stretch technique</td>
</tr>
<tr>
<td>Requirements for safety and maximal efficacy</td>
<td>Slow speed, day rest between session Increase weight progressively to maintain relative intensity</td>
<td>Safe environment Dynamic rather than static modes Gradual increases in difficulty as competence is shown</td>
<td>Static rather than ballistic stretching</td>
</tr>
</tbody>
</table>

Source: Fiatarone-Singh & Mayer, 2002

Further studies are needed to test the dose response and the association between physical activity participation, physical fitness and chronic disease. These studies need to incorporate older people in residential care as existing studies have failed to provide good evidence on dose response in that setting (Fiatarone-Singh & Mayer, 2002). Without exception, all reported physical activity studies in residential care
found poor sustainability after the programme ended (Forster, 2005). Interventions that utilise some form of long term maintenance may provide better long term outcomes.

### 2.4.13 Adherence to physical activity and exercise programmes

Factors that encourage younger populations to exercise are prolific. While there is also a ‘wealth of epidemiological data linking physical activity to health status and optimal aging’ good quality randomised controlled studies are still needed to explore experimental effect (Singh-Fiatarone, 2002). Unfortunately, poor adherence to exercise programs is a common problem. In home-based exercise programs, compliance has been shown to decrease with an increasing number of exercises (Henry & Eckert, 1999). When designing exercise programmes for older people, the potential benefits of including extra exercises or complex sessions must be considered against the potential disadvantage of reduced adherence.

Research on finding ways to get older people involved with physical activity programmes has been encouraging (King, Taylor, Haskell, & DeBusk, 1988). Less is known about how to increase levels of physical activity for the frail and non frail group of older people in residential care. One approach to considering the different ways to maximize the benefits for older people is by exploring mediating and moderating factors (Singh Fiatarone, 2002). Mediating factors are mechanisms that possibly underlie the connection between physical activity and enhanced quality of life in older adults; moderating factors influence the strength or direction of this relationship.

### 2.4.14 Moderating factors

It has been proposed that ease of involvement in physical activity depends on the value that older people place on physical activity. Individuals may find different types of activities more satisfying and therefore these activities will have more value. Cantor and Sanderson (1999) propose that active participation in valued life tasks is
essential to well being, and that these tasks depend heavily on the cultural and social contexts in which an older person lives. For example, an older person who has recently been admitted to a long term care facility may have physical activity discouraged by family members or health care professionals, in effect promoting a self schema of inactivity.

A recent USA survey explored adherence to a prescribed home exercise programme in 556 older people during a three year period and found that 37% no longer performed the exercise programme, citing worsening health status as the prime reason for poor adherence. Poor adherence is best predicted by barriers rather than motivators. Older people ranked eight specific barriers: no interest, poor health, weather, depression, weakness, fear of falling, shortness of breath and low outcomes expectation (Forkan et al., 2006).

Exploring physical barriers to participating in physical activity has been of considerable interest. Evidence has identified existing health problems and fear of injury Brown (1990); joint pain and fatigue Conn (2003); older people considering themselves ‘past it’; Ruuskanen and Parkatti (1994); and fear of falling Tinetti and Powell (1993).

This would suggest that the relationship between modulating factors for an older person participating in physical activity is complex and participation is not due to a single psychological, social, environmental or physiological mechanism. Information on how mediating factors might enhance participation may aid the design of an intervention that is acceptable for this group of older people.

2.4.15 Mediating factors

No studies that have explored mediating factors address the question of what aspects of physical activity affect satisfaction in older people. However, current literature does provide some insights into this complex issue (Rejeski & Mihalko, 2001). In reviews on physical activity interventions in older individuals, McAuley (1995) and Katula (2006) provide a compelling argument on the favorable effect physical activity has on self efficacy beliefs in the older adult. They suggest the mediating role of self
efficacy on both physical and psychological outcomes has been associated with physical activity. Diener and Lucas (2000) showed that self esteem is a strong predictor of life satisfaction, and a recent study by Rejeski (2001) found similar results. Older adults in both these studies reported that physical activity not only increased overall energy but also increased their level self esteem (Diener & Lucas, 2000; Rajeski, Mihalko S., 2001).

Barnowski et al. (1998) propose interventions that introduce change in mediating and moderating factors as a promising approach to development of physical activity interventions. One mediator might be goal setting to enhance older people’s adherence to a physical activity programme for longer durations.

2.5 Goal setting

Empirical research about goal setting theory has been published extensively in organisational behavioural literature. More recently, Locke and Latham (2002), two motivational theorists, formulated goal setting theory based on the premise that conscious goals affect action. The goal is the object or aim of an action. When people are confronted with goals they use knowledge and skill already acquired to attain the goal; if the path to the goal is unknown, then people draw from a repertoire of skills that they have used previously in related contexts, and apply them to the present situation (Bandura & Schunk, 1981). If the task related to the goal is new, people will engage in deliberate planning to develop strategies that enable them to attain their goal. Goal setting has also been shown to be more effective when the goals are specific and have full involvement of the person who wishes for or needs the goal (Locke & G. Latham, 2002).

2.5.1 Goal moderators

Empirical and theoretical research has identified goal moderators that affect goal attainment. There are specific factors that influence and make goal attainment achievable, including importance and commitment. Several studies have shown that making a public commitment to a goal emphasises its importance, and allowing people to participate in the goal setting process enhances and reinforces the
commitment (Bosch Capblanch & Garner, 2004; D. T. Wade, 1998). Wofford et al. (1992) postulated that there is a significant relationship between self efficacy, expectance of goal attainment and task complexity. In other words people develop and maintain commitment to goals that are important to them.

Bandura and Schunk (1981) report that self efficacy is increased through having real interest in setting and achieving the goal and this is enhanced by setting proximal sub goals. In the United States, Holden (1991a) found a statistically significant relationship between self efficacy and health related outcomes. Further evaluation of moderators of goals indicates that feedback is required for goals to be effective; people need summary feedback that reveals progress in relation to their goals (Holden, 1991). Bandura, (1986) and Powers and Faden (2000) found that the combination of goals plus feedback was more effective than goals alone. They also found that people who set a more difficult goal reached their goal more quickly.

2.5.2 Goal setting and older people

There is little evidence to suggest that older people cease setting goals as they become older; however, the types of goals set may have different meanings and different domains. Findings from the Berlin Ageing Study showed that older people continue to have dynamic, multifaceted and future orientated goals (Baltes & Mayer, 1999; Holahan, 1984). Personal goal commitment creates a sense of meaning in life, and commitment to goals leads to older people enacting behaviour that will result in desired attainments (Wrosch, Scheier, Miller, Schulz, & Carver, 2003).

This is an important factor as finding purpose in life may become more difficult for some older people than it is for younger and middle aged adults. For some older people, particularly those with limited function, it may be beneficial to select a few goals on which to concentrate (Wressle, Eeg-Olofsson, Marcusson, & Henriksson, 2002). Holahan and Chapman (2002) found that setting of goals has a positive benefit to both psychological well being and life satisfaction for older people. There is reasonable evidence in rehabilitation research that goal planning and goal setting in the context of rehabilitation occurs, and that setting both long and short term goals
Chapter 2: Literature review

is generally more effective and should be planned in close association with the older person (Wade, 1998).

The setting of goals improves long term effectiveness and this is more likely to occur if there is a specific intervention to facilitate behavioural change. Other health speciality areas that have included older people as active participants in goal setting activities include: spinal cord injury Kennedy et al (2003), cardiac events, geriatric care in nursing homes Blair (1995), geriatric care in hospitals Kenny (1990), care planning by geriatric assessment centres Spencer et al (Bogardus et al., 2001; 1999) (Bogardus, Bradley, Williams, & Maciejewski, 2001), chronic disease management; diabetes Arnold, Butler, Anderson, Punnell and Feste (1995); arthritis Gyuresik, Eastabrooks, Eschenfelder, Fourant and Murray-Gerzik (2003), and pharmaceutical care (Bucci, Jackevicius, McFarlane, & Liu, 2003; Shalib & George, 2003). Goal setting is also useful for health promotion in older people (Allison & Keller, 1997). Few studies were found relating to the effects of participation in goal setting by older people in residential care. This will be a focus of this study.

Having considered aspects promoting and constraining participation in physical activity and programmes delivering activity programmes the following section consider the impact of the setting of residential care specifically in activity promotion.

2.6 The environmental impact of living in a residential care facility

2.6.1 The paradox of dependency and independence for residents

Relatively little systematic or empirical work has been undertaken to explore this question. Of particular relevance to this study is knowledge about physical activity determinants that might hamper or facilitate subgroups of older people in residential care participating in a physical activity intervention. Older people in residential care have been described as having multiple chronic conditions, more likely to be frail and inactive, and be relatively old (King, 2001; Singh Fiatarone, 2002).
Designing physical activity programmes that cater for such groups may require a variety of approaches. Functional (ADL) activity and physical activity is greatly reduced in older people in residential care and may occur for a number of reasons as discussed in preceding sections. These include frailty, current functional status, deconditioning and disability (Fried, 2004). A number of studies have shown that functional decline primarily occurs in older people in residential care due to the behaviours of caregivers in these residential care settings (Barton, Baltes, & Orzech, 1997; Bowers & Becker, 1992).

There appears to be strong evidence in the disability literature that ‘reduced independence’, due to current cultures of long term care facilities, leads to disability. The notion was first reported by Baltes and Honn (1983) from a series of observational studies in residential care facilities in the 1980s. They observed that care giving practices that promoted dependency could result in increased impairment and disability.

Care delivery patterns in residential care have shown that caregivers often provide too much or inappropriate assistance to residents, increasing the circle of dependency (Baltes, 1988). Consequently discrepancies occur amongst staff and older people around what older people can do and what they actually could or should do in relation to completing their activities of daily living (Baltes, 1988; Barton et al., 1997; C. Blair, 1999; Bowers, Lauring, & Jacobson, 2001; Foner, 1994). A number of studies in institutional settings identify reasons why a degree of enforced dependency occurs, which include a lack of time and staff, lack of knowledge or skill, or more commonly, a desire to be helpful (Atwood, Holm, & James, 1994; Blair et al., 1996; Kayser-Jones, 1996; Kayser-Jones & Schell, 1997; Roger, Holm, Burgio, 1999; Tappen, 1994). The literature often describes this as the ‘structured dependency model of care’ (Townsend, 1962).

More recently, Bowers (2000) observed that physical activities such as walking, and functional activities of self care, were rarely reinforced by staff working in long term care. Dependent behaviours such as requests for assistance were readily provided and
encouraged by staff, rather than residents being encouraged to attempt to walk or dress themselves (Bowers, Esmond, & Jacobson, 2000).

Some of the best evidence relates to muscle strength and balance and endurance training. However it is not clear what the ideal exercise prescription is for frail older people. From a clinical perspective it is important to design a simple, effective physical activity programme. In the next section a systematic review was undertaken to explore the effectiveness of interventions that have been trialed in long term care in order to inform design of an intervention to be tested.

2.7 Systematic review of physical activity interventions in residential care

Exploration of the literature in the previous section is promising. Older people, including the frail older person, do benefit from physical activity and exercise. How this is best delivered to older people in residential care is less known. This section reviews the effectiveness of physical activity interventions that have been trialed in residential care settings and the effects that may improve or maintain health outcomes for older people. The systematic review was conducted in accordance to the British Medical Journal (BMJ) systematic review guidelines.

2.7.1 Aims and review objectives

The main objective of this review was to select literature from relevant areas of health, physical activity and quality of life to use for identification, development and implementation of a physical activity exercise programme relevant to older people in residential care in New Zealand.

2.7.2 Methods

The following methods were utilised in the search strategy for identification of studies:

- **Types of studies:** Any randomised or quasi-randomised (i.e. allocation of participants to treatment groups which were not strictly random, such as date of birth). Observational studies and non randomised trials were also reviewed.
Types of participants: The participants in the trials were people over 65 years of age who resided in an institution.

Types of interventions: Any trial that had at least one group of participants who received individualised or group physical activity programmes as the primary intervention were considered for inclusion. Physical activity programmes were defined as functional type exercises (such as sit to stands), general exercise programmes (such as resistance and/or strength exercise, walking or tai chi), and multidisciplinary rehabilitation interventions that included a functional component (Forster et al., 2008).

Search strategy for identification of studies: Relevant trials meeting the inclusion criteria for this review were identified by a computer aided search of databases that included The Cochrane Central Register of Controlled Trials (Central) 'The Cochrane Library Issue 4, 2002', Medline 1966-2010, Embase 1980-2010, CINAHL 1982-2010, PEDro 1952-2010. The search terms for MEDLINE (ovid) were: Late life, old age geriatric senior, gerontology, nursing home, long term care residential care or facility, rehabilitation, physical therapy, exercise, activities of daily living, tai chi, walking physical education and training, physical fitness, muscle fatigue, range of motion, rehabilitation nursing, strength and resistance, endurance, balance or flexibility, patient social adjustment and adaptation psychological (Forster et al., 2008). Published, unpublished, in press and reports were considered.

2.7.3 Results

Physical activity interventions in residential care: The first section of the review reports on current literature and quasi experimental and observational studies that describe and evaluate what has been successful and less successful when implementing physical activity programmes in residential care. The second section provides evidence from randomised controlled trials conducted in residential care settings. Designing interventions that are low impact appear to be particularly promising in increasing physical activity participation for older people in residential care.

Observational studies: How much physical activity does an older person accomplish on a daily or weekly basis in a care facility? An observational study found that 60% of residents practiced some kind of physical activity during the week (Ruuskanen & Parkatti, 1994). Men carried out more intensive exercise than women. Satisfaction with life was a significant factor associated with participating in physical
exercise among the women and a very significant factor in the men (Dishman et al., 1985).

Conversely, other studies have reported that residents in long term care cease formal exercise programmes at a much higher percentage than their community dwelling counterparts (Guralnik, Leveille, Volpato, Marx, & Mansfield, 2003). Possible explanations for this have been discussed in the previous section. In summary, older people may have had little previous experience undertaking exercise, or attitudes to physical activity may have changed following admission to a rest home (Fiatarone, 1995). Finding ways to maintain or the motivation to continue to participate in physical activity, including even simple tasks such as walking, clearly needs further exploration.

Indentifying prescriptions that staff in residential care facilities can factor into the daily lives of older people is also important. A small observational study undertaken in the USA exploring the impact of a low level walking activity led by caregivers, hypothesised that normal staff behaviour was the main cause of decreased habitual physical activity in long term care (Burgio, Burgio, Engel, & Tice, 1986). The investigators in this study showed that usual staff can effectively implement a walking programme by prompt and praise procedures. This positively impacted on improved walking distance and independence in eight nursing home residents. The programme was successfully implemented as part of the daily routine in the meal time setting, and the effect was maintained following the four month follow up (Burgio et al., 1986). Although the sample size was relatively small the results are promising, suggesting that staff within residential care settings can actively implement a physical activity programme. With adequate training they can change entrenched care-giving practices (Burgio et al., 1986).

The prevalence of therapy use in nursing homes was compared in a large international comparative study that included Denmark, USA, Japan, Italy and Iceland (Ribbe et al., 1997). This trial compared the types of older people more likely to receive physical or occupational therapy treatments over a consecutive seven day period results in all countries showed that residents with poorer activities of daily
living scores but good cognitive scores were more likely to receive therapy than residents with poor cognition and poor activities of daily scores. A higher percentage of this group was 85 years and older (Ribbe et al., 1997). This suggests that only residents who had the potential to improve in function received specialist therapy.

A Canadian study surveyed 97 low level care facilities providing some type of physical activity programming for residents and found that the most popular programmes provided simple flexibility/stretching (91%) or walking (85%), while only a little over half the surveyed facilities (55%) offered any form of strength training (Spence J, Poon, & Mummery, 1999). In New Zealand, there is little evidence describing the type of physical activity programmes offered in residential care settings. The exception is O’Hagan et al. (1994) study which provided group exercises for a group of older people once a week for a period of one year, supplemented week with a 10 minute exercise programme twice a week, facilitated by regular care staff.

Anecdotally a number of residential care facilities provide standardized non-weight bearing, range of motion group exercise programmes to their residents. These are generally performed by a recreational or activities co coordinator employed by the facility. The exercise programmes are self taught, and developed by organisations such as the Arthritis Society or by a physiotherapist contracted to a particular facility. Often programmes such as these are considered not challenging enough for frail older residents and even less so for higher functioning residents. For higher functioning residents, physical activity programmes should be aiming for prevention or reversal of the pattern of decline associated with long term care and institutionalisation (Lazowski et al., 1999).

**The effects of physical activity interventions in residential care:** There is a growing body of literature that describes well designed intervention studies attempting to increase the level of physical activity, especially those involving group exercise programmes in residential care (Rydwik et al., 2004). There is little doubt that epidemiological studies have demonstrated that those with a lifetime habit of physical activity will continue to do well into their old age (King et al., 1992). What is
not known is how we can best improve the activity levels of those older individuals not habitually physically active, or those who have been physically active, but due to frailty, reduced functional status or disability, no longer feel able to participate in some daily physical activity.

Several key themes have threaded through this literature review. Firstly, no studies have clearly shown the links between individual intervention components and effectiveness, indicating further work is essential to identify successful strategies. Secondly, we know that motivational interventions that focus on individualised interventions perform better than group exercises to some extent.

Recent systematic reviews addressing the effects of physical activity programmes on older people found a large heterogeneity effect in the number of subjects, types of physical activity programmes and assessments, but also in methodological quality. The diversity within and between the studies was challenging, leading reviewers to conclude that a meta analysis was not possible due to the poor quality of reported studies (Forster et al., 2008; Rydwik et al., 2004). Innovative studies in residential care must be thoughtfully planned to ensure the quality of the study is high. This should include the ability to report direct comparisons between groups.

**Physical performance:** In summarising the literature, encouraging research findings are emerging with respect to rehabilitation programmes appropriate to the circumstances and needs of older people in residential care. Recent intervention studies have shown that older people can participate in moderate physical activity programmes. A number of these studies featured exercises designed to be adapted to everyday life as well as specific modalities. As an example of the former, strength training in some studies used weights and elastic resistance bands. Walking and its derivations emerge as the most widely studied in everyday life programmes. Walking bears a natural relationship to ordinary activities of daily living, making it easier to integrate into lifestyle and functional tasks than any other mode of exercise. For the older person it was more likely to translate into improved functional independence and mobility than other modes of exercise.
**Endurance and older people in residential care:** Older people in residential care often have marked reduction in the need or desire to be mobile; these factors are often addressed by designing interventions that have mobility and endurance components. Several examples demonstrate improved endurance by improving both distance walking and walking speed (Schnelle, MacRae, Ouslander, Simmons, & Nitta, 1995). Several other studies were able to improve mobility to the extent that participants who used forms of mobility aids graduated from a wheelchair to a walker (Meuleman, Brechue, Kubilis, & Lowenthal, 2000; Mulrow et al., 1994) or from a walking frame to a walking stick (Fiatorone et al., 1994).

Older people who participate in gardening also benefited from improved mobility. A recent study found that the gardening intervention group performed significantly (p<0.001) better on a ‘walk in corridor’ measure (V. Brown, Allen, Dwozan, Mercer, & Warren, 2004). A tai chi intervention significantly improved walking speed (Choi et al., 2005).

A successful study tailored the interventions to meet the needs of both low and high mobility residents. Prior to participating in the trial, a Timed Up and Go result of less than 20 seconds was used as an indicator of high mobility, while those residents with Timed Up and Go scores of greater than 20 seconds were classified as having low mobility. This assisted the researchers in distinguishing between persons who require gait aids and personal assistance for safe ambulation. The information provided filtering mechanisms during individualised programme development for older people in the study (Lazowski et al., 1999).

Other studies have been less successful or have shown no observed improvement in the intervention group (Morris et al., 1999). Studies by Alessi et al (1999), Au Yeung (2002), Cott (2002), and Crilly et al (1989) have reported no effect of activity progression on endurance or walking. Developing interventions that put older people at risk is a challenge for physical activity researchers studying frail older people in residential care settings. Faber et al (2006) found that a functional walking intervention programme significantly (p<0.05) increased the risk of falling among...
frail participants but not for non frail participants. This study is the first to report the moderating impact frailty has on physical activity as measured by walking ability.

In an endurance activity intervention with older people who were frail, the more impaired gained the most functionally; however, few could effectively perform endurance training (Meuleman, Brechue, Kublis, & Lowenthal, 2000). Schnelle et al (1996) studied frail older people who were physically restrained for their safety, and established that demented residents cooperated well with the walking exercise programme and that there was an overall decrease in injury risk.

**Strength training and older people in residential care:** Fiatarone et al. (1994) showed that it is never too late for strength training. Implementing a progressive resistance training programme with frail older people, many of whom were over 90 years, results of eight weeks of training showed the absolute amount of weight lifted and thigh muscle both improved by 10%. In addition gait speed improved 48%. This combined increase in muscle strength and walking speed has been suggested to have significant implications for reducing physiological and functional impairment and reducing falls (Fiatarone et al., 1994).

Less positive effects have been noted in other studies. Lazowski et al.’s (1999), intervention improved shoulder abduction strength but found a decline in lower limb muscle strength, balance and mobility. Outcomes were better in the control group on lower limb measures. This intervention involved training regular recreation staff, aides and volunteers to assist with exercise programme. ROM and FFLTC programmes consisted of progressive strength exercise, using soft weights and theraband. Kinetic chain positions, balance training, flexibility and walking were conducted for 45 minutes three times a week over a four month period. This programme was not individualized but self paced. Tailoring the intensity at a higher level for the more mobile individuals may have improved the overall effect of the intervention for the group.

Several other studies reported gains in both control and intervention groups. For instance, one study found that both the control and intervention group increased
their physical activity during their study, although the trend was greater in the exercise group (Clark, Wad, Massey, & VanDyke, 1975). This was also demonstrated in the Functional Incidental Training study (FIT), with both groups increasing their physical activity (Schnelle, 1995). An alternative intervention testing FIT with a sleep improvement programme had no effect on overall levels of physical activity; however, subjects who received the enhanced daytime activity programme spent significantly less time in bed \( (p=0.029) \) during the day (Alessi et al., 1999). A hamstring strength training intervention showed significant \( (p<0.01) \) improvement in both the control and intervention group after an activity programme (Sauvage et al., 1992).

Few studies reported or examined the benefits of sustainability. Those studies that reported increased strength, such as Meuleman (2000), found that the improvements were not maintained after the completion of the intervention. Buettner (1997) demonstrated significant strength gains in participants in the intervention group during the first 20 weeks of a 30 week physical activity intervention. However this was not sustained in the last 10 weeks of the study, when strength of those in both intervention and control groups deteriorated. Combining strength and balance exercises has shown positive benefit for community dwelling older people. Could such benefits occur in older people in institutions?

**Balance training in older people in residential care:** As many as 14 studies completed in residential care settings used balance as an outcome measure, while nine studies included balance as a component of the intervention (Forster et al., 2008; Rydkik et al., 2004). The majority of the studies resulted in benefit for participants’ balance, for example, Au-Yeung (2002) exercise programmes prevented the decline in balance in the intervention group \( (p=0.02) \). Schnelle, MacRae et al. (1995) and Schoenfelder (2004) measured effectiveness of a falls prevention programme, which included strength and balance retraining. Although not statistically significantly due to small sample size, results showed that the intervention group trended in the predicated direction in falls efficacy with an opposite direction change in the control arm, except for walking speed which increased. Table 4 provides full details of the trials.
Table 2-5: A selection of successful interventions in residential care

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Country</th>
<th>Methods</th>
<th>Participants</th>
<th>Intervention</th>
<th>FU</th>
<th>Effect</th>
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<tbody>
<tr>
<td>Sackley et al 2009</td>
<td>UK</td>
<td>Cluster randomised controlled trail</td>
<td>N 249 residents Intervention (12 homes, 128 residents, mean age 86yrs) Control (12 homes, 121 residents, mean age 84yrs))</td>
<td>Intervention group received targeted physiotherapy on strength, walking, sit to stands, bed to chair transfers and the occupational therapy targeted improving independence in basic activities of daily living activity daily Control group usual cares</td>
<td>Barthel Index, Rivermead mobility index, TUG, Mood was assessed using the Hospital anxiety and depression subscale.</td>
<td>No difference on Barthel Rivermead mobility index. TUG was abandoned due to inappropriateness in study population. No analysis reported on depression subscale in results.</td>
</tr>
<tr>
<td>Faber 2006</td>
<td>Holland</td>
<td>Randomised control trial</td>
<td>N=278 Mean age 85.6 years</td>
<td>Two exercise programmes randomly distributed across 15 facilities. Intervention 1) functional walking consisting of exercise related to daily mobility activities. Intervention 2) Balance exercises Tai Chi. Control group usual activities only.</td>
<td>Performance orientated mobility assessment (PORMA), physical performance score Groingen activity restriction scale (GARS) measurement of self reported disability.</td>
<td>An effect on PORMA score in intervention. Improved physical performance score in subgroup of re frail residents.</td>
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### Table 2-5 (cont.): A selection of successful interventions in residential care

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<th>Investigator</th>
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<tbody>
<tr>
<td>Brown et al 2004</td>
<td>USA</td>
<td>Randomised control trial</td>
<td>N 66</td>
<td>Indoor gardening group participated once weekly gardening activities for 5 weeks</td>
<td>UCL Loneliness Scale (V3) Revised social provisions scale MDS for ADL</td>
<td>Social interaction with or without gardening showed less loneliness Gardening group improvement in upper body movement including transferring</td>
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<td></td>
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<td>5 week intervention One nursing home</td>
<td></td>
<td>Control group received 20 min visit for 5 weeks</td>
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<tr>
<td>Baum et al 2003</td>
<td>USA</td>
<td>Randomised controlled semi crossover trail</td>
<td>N20 (5 from nursing home, 15 from assisted living) Aged 75-99 years</td>
<td>Intervention group met 1 hour three times a week and participated in seated range of motion exercises, strength training using elastic resistance bands and soft weights. Control group met three times a week and participated in activities such as painting for first 6 months then crossed over to exercise for second six months.</td>
<td>TUG decreased by 18 seconds Increased PPT score by 1.3. Increased Berg Balance scores by 4.8 and increased MMSE score by 3.1</td>
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<tr>
<td></td>
<td></td>
<td>12 months One long term care facility included assisted living and nursing home residents</td>
<td></td>
<td>Timed up and go (TUG) Berg Balance scale, physical performance test (PPT), MMSE</td>
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Table 2-5 (cont.): A selection of successful interventions in residential care

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<tbody>
<tr>
<td>Schnelle et al 2002</td>
<td>USA</td>
<td>Randomised, controlled, crossover trial</td>
<td>N= 190 Mean age 84 Inclusion criteria being incontinent, long stay residents, required assistance to transfer from bed to chair</td>
<td>Intervention included prompted voiding combined with individualized functionally orientated endurance and strength training exercises 4 times a day, five days per week. Group 1 received the intervention while group 2 was control group. Group 1 and 2 crossed over at 8 weeks. Group 1 received no intervention following crossover.</td>
<td>Functional Independence Measure (FIM)</td>
<td>6 % drop out Positive effect on sit to stands, 6 m walk arm strength, physical activity and incontinence</td>
</tr>
<tr>
<td>Meuleman et al 2000</td>
<td>USA</td>
<td>Randomised control trial</td>
<td>N 78 residents Mean age 84 Inclusion criteria Requiring assistance with one or more physical activity of daily living, medically well, duration of disability</td>
<td>Intervention group received 3 weekly resistance training and 2 weekly endurance training. Control group usual cares</td>
<td>Physical activity of Daily Activities (PADL), Instrumental Activities of Daily Living (IADL)</td>
<td>Increase in muscle strength at 8 weeks only. Increased ability to complete activities of daily living in most frail subgroup. No effect on endurance and walking speed.</td>
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Table 2-5 (cont.): A selection of successful interventions in residential care

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<tbody>
<tr>
<td>Lazowski et al 1999</td>
<td>Canada</td>
<td>Randomised controlled trail</td>
<td>N=96</td>
<td>Functional Fitness for Long Term Care (FFLTC) group: progressive strength, balance, flexibility exercises and walking. 45 min sessions, three times a week. Range of Motion (ROM) exercise group: Seated exercises of fingers, hands, arms, knees and ankles. Relaxation exercises and word memory games. 45 min sessions, three times a week. Control group range of motion exercises 45 min sessions 3 weekly</td>
<td>General Function; FIM, grip strength, modified sit and reach test; Mobility TUG, stair climbing, Gait speed 7 metre walk, Balance; Berg Balance ROM shoulder,</td>
<td>88% attendance rate for FFLTC and 79% Improvement in knee extension, hip and elbow flexion, improvement of mobility in FFLTC group Improved balance Increased ROM in upper and lower extremities. Only shoulder strength improvement in ROM group</td>
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<tr>
<td></td>
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<td>4 months duration</td>
<td>N=55</td>
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<td></td>
<td>Mean age 81.3</td>
<td>N=41</td>
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<td>Inclusion criteria</td>
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<tr>
<td></td>
<td></td>
<td>Able to stand with minimal assistance, ability to follow simple instruction</td>
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<td></td>
<td>Five long term care sites stratified into two levels of mobility, based on Timed Up and Go scores. At each site residents were randomized to either FFLTC or ROM exercise group</td>
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<tr>
<td>Morris et al 1999</td>
<td>USA</td>
<td>Randomised controlled trial</td>
<td>N=468 Mean age 84.7</td>
<td>Intervention group FFYL; Progressive resistance training of major muscle groups related to function and mobility. Two sets of 8 reps with progressive heavier weights. Walking increased incrementally to max 20 mins continuous walking. Sessions conducted 3 times a week. Walking on alternate days. Self care for seniors; Nursing rehabilitation intervention tailored to resident. Aim of maintaining function or preventing decline.</td>
<td>Functional measures ADL, MDS summary, Sit to stands five times in a row, Timed up and Go, 6 minute walk, 5 Balance positions. Geriatric depression Scale</td>
<td>Increase in activities of daily living in group 1 and 2, No effect on Mobility, gait speed, balance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 months duration</td>
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<td></td>
<td></td>
<td>Six nursing homes</td>
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<td></td>
<td></td>
<td>2 nursing homes randomized to control, 4 randomized to intervention</td>
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<tr>
<td>MacRae et al 1996</td>
<td>USA</td>
<td>Randomised controlled trail</td>
<td>N=37</td>
<td>Intervention group 3 times a week walking/wheelchair activity for 20 minutes. Rowing exercises and resistance training before and after walking activity Control group usual cares.</td>
<td>TUG, 6 metre walk, hand grip strength, increased physical activity, Tinetti’s Mobility Assessment, quality of life scale, geriatric depression scale (GDS), pain scale.</td>
<td>Positive effect on walking activity, No effect on TUG, handgrip strength or physical activity, Mobility assessment, GDS, or pain scale.</td>
</tr>
<tr>
<td>Schnelle et al 1995</td>
<td>USA</td>
<td>Cluster randomised controlled trail</td>
<td>N=94</td>
<td>Intervention group prompt voiding daily and walking programme 6 times a day, 1-5 mins with a maximum 20mins walking per day 1-4 sit to stands Control group prompted voiding only.</td>
<td>Timed sit to stands, 6 mt walk</td>
<td>Positive effect on walking distance and sit to stands. No improvement in gait or wheeling speed.</td>
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<tr>
<td>Investigator</td>
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<tr>
<td>Fiatarone et al</td>
<td>USA</td>
<td>Randomized controlled trail</td>
<td>N= 94</td>
<td>Intervention group 1 muscle strength exercises with a nutritional supplement for 45 min sessions three times a week</td>
<td>Katz, stair climbing and gait speed, Nutritional intake, BMI, MMSE, Geriatric depression scale.</td>
<td>6% drop out Positive effect shown in hip strength and increased body weight. Gait speed increased in group 1 and 3. Stair climbing and spontaneous activity increased in group 1 and 3. Total energy intake increased in exercise plus supplement group 1. No effect on whole body fat free mass in nutritional supplement group</td>
</tr>
<tr>
<td>1994</td>
<td></td>
<td>10 weeks duration</td>
<td>Mean age 87</td>
<td>Intervention group 2 Nutritional supplement once a day for 10 weeks</td>
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<td>Inclusion criteria ability to walk 6 metres</td>
<td>Intervention group 3 Muscle strength exercise for 45 mins</td>
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<td></td>
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<td>N= 94</td>
<td>Control group Placebo supplement and social visits.</td>
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### Table 2-5 (cont.): A selection of successful interventions in residential care

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<tbody>
<tr>
<td>Tappen et al 1994</td>
<td>USA</td>
<td>Randomised controlled trail</td>
<td>N=63 Residents with dementia</td>
<td>3 groups randomly assigned to one of three treatments; group 1 skill training, group 2 stimulation, or group 3 usual care (control) Functional skills training and general stimulation interventions were completed in a group setting 5 days a week. Repeated practice in basic activities of daily living were completed daily</td>
<td>Physical Self-Maintenance Scale, Performance Test of Activities of daily living, Goal attainment</td>
<td>Increase in Physical Self Maintenance score in both group 1 and 2 with a greater increase in group 1. No difference in Activities of daily living test</td>
</tr>
<tr>
<td>Mulrow et al 1994</td>
<td>USA</td>
<td>Randomised controlled trail</td>
<td>N= 194 Intervention n=97 Mean age 79.7yrs</td>
<td>Intervention group Physical exercises tailored to individual. Incremental programme, muscle strength, walking, Balance training, ROM. Individual sessions conducted 3 times a week by physio</td>
<td>General function Katz ADL scale, range of movement, mobility. Grip strength Sickness Impact Profile Adverse events, falls</td>
<td>A 15.5% improvement in mobility subscale of Physical Disability Index. Decrease in assistive device usage.(p&lt; .0050) Increased bed mobility tasks (p=.06) 7% drop out rate</td>
</tr>
<tr>
<td>Investigator</td>
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<tr>
<td>McMurdo M et al</td>
<td>Scotland</td>
<td>Cluster Randomised</td>
<td>N=49</td>
<td>Intervention group Progressive low intensive exercise performed seated</td>
<td>Barthel Index, flexibility, sit to</td>
<td>32% drop out Increase in grip strength, spinal flexion, chair to</td>
</tr>
<tr>
<td>1994</td>
<td></td>
<td>control trial 7 months</td>
<td>n=20</td>
<td>45 min sessions conducted twice weekly</td>
<td>stand time, grip strength, Wright’s</td>
<td>stand time and activities of daily living.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>duration 4 Four</td>
<td>Mean age 82.3 Control group n=29</td>
<td>Control group Music and reminiscence therapy 45 min sessions</td>
<td>Balance test, Life Satisfaction</td>
<td>Self reported depression decreased in both groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>residential homes</td>
<td>Mean age 79.3</td>
<td></td>
<td>Index, Geriatric depression scale, MMSE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Exclusion criteria severe communication difficulties</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sauvage et al</td>
<td>USA</td>
<td>Randomised controlled</td>
<td>N=14</td>
<td>Intervention group Progressive resistance lower extremity training and</td>
<td>VO2max, Muscle strength testing, Tenetti gait and balance scale.</td>
<td>Increase in knee strength and gait speed and step length. No effect on balance or endurance in intervention group</td>
</tr>
<tr>
<td>1992</td>
<td></td>
<td>trial 12 weeks duration</td>
<td>n=8</td>
<td>extremity training and stationary cycling, 3 times a week. 20 mins aerobic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>One Veterans Affairs</td>
<td>Control group n=6</td>
<td>exercise, 10 reps per lower limb exercise Control group</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>medical Centre</td>
<td>Inclusion criteria scored less than 30 on Tinetti gait and balance scale</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Health related quality of life: There is some evidence that physical activity interventions may have the capacity to enhance quality of life alongside the physical benefits of the intervention. Several studies have found physical activity interventions improved life satisfaction or increased mood (Brill et al., 1998; McMurdo & Rennie, 1993; Mihalko & McAuley, 1996). A more recent study found significant improvement in the mental health and social function of the intervention group and an increase in socialisation among the intervention group (Karl, 1982; Kinion, Christie, & Villella, 1993). Interestingly, several studies showed improvement in both intervention and control groups (Cott et al., 2002; McMurdo & Rennie, 1993). Mc Rae et al. (1996) walking programme conducted in a nursing home in the United States found no difference between intervention or control groups. Suggestions have been made that short term exercise interventions of three months or less are not sufficient for older people to show the cognitive or psychological benefits of the physical activity. Developing interventions that are longer and more sustainable are recommendations that need to be considered when determining the most effective physical activity programmes for a group of older people who function at such diverse levels, without causing harm.

Adverse events: Adverse events were poorly monitored in these trials. The two studies that did report adverse events were reported at an individual level. Groin pain in one participant was reported by Bautmans et al (2005) and two accounts of lower leg pain following whole body vibration were reported by Bruyere and Wuidart (2005). One study that provided high intensity intervention plus nutritional supplements reported their adverse events in a percentage; 9% had an adverse event, the majority being minor (Rosendahl & Lindelof, 2006). Lack of reporting makes it difficult to assess the risks of injury or other adverse events associated with physical activity interventions. Conversely the lack of evidence may suggest that provided older people in long term care provided are careful, they can successfully participate in physical activity programmes.

Can activities of daily living/functional activity interventions be of greater benefit than exercise programmes? Few trials have attempted to increase habitual physical activity by incorporating more usual physical activities into everyday life.
Successful examples in the community have not been replicated on more frail populations. A randomised controlled study demonstrated that a functional-task exercise programme improved the physical performance of a group of community dwelling older women more than resistance strength exercise (de Vreede et al., 2004).

A ‘lifestyle’ approach to physical activity has been recently advocated in an attempt to improve exercise uptake (Rejeski et al., 2005). It is not clear if this will have the same benefits as structured exercise programmes but it has been suggested older people may enjoy this approach. Older people may benefit more by including exercises as functional activities undertaken in their daily activities, rather than exercises per se (Fiatarone-Singh & Mayer, 2002). The literature to date has highlighted that older people in residential care are far more physically sedentary and this may offer a simple solution to a complex problem. Studies are required to investigate this premise.

There is little argument that an older person’s ability to participate in physical activity programmes is determined by a number of factors (Dishman, 1994). These include establishing programmes that suit older people who maybe physically able but cognitively impaired, frail or physically more capable (Voelkl, Brant, & Galecki, 1995). Present evidence seems to suggest that a more functionally based programme that utilises the resident’s activities of daily living as an exercise modality may be more acceptable and sustainable for older people in residential care (Fiatarone-Singh & Mayer, 2002; Keysor & A Jette, 2001).

By providing increased occupational and physiotherapist hours, residents involved in restorative interventions showed improved function and this intervention was cost effective (Przybulski et al., 1996). An enhanced restorative programme was delivered to the intervention group while the control group received usual care, showing a difference in overall function over a 24 month period. The results of this study have been encouraging, the intervention group was able to maintain or limit decline in functional status in the first 18 months of the trial. In addition, cost analysis showed that less caregiver involvement and less overall care delivery resource were required,
even though staffing requirements were four times that of the control group (Przybulski et al., 1996).

A further example of a habitual physical activity programme for people in residential care is known as the Functional Incidental Training (FIT) study. This study has been evaluated at several time points in a variety of long term care settings (Alessi et al., 1999; Ouslander et al., 2005; Schnelle et al., 1996). Although results from these three studies have shown significant improvement for residents, negative aspects surrounding the cost effectiveness of the intervention have been raised. The intervention was delivered by trained research staff which included prompted voiding combined with individualised, functionally oriented endurance and strength training exercises four times a day, five times a week for eight weeks. The sample was small with a total of 64 residents completing the study; however significant effects on outcome measures in endurance, strength and urinary incontinence were shown with no effect in improved walking distance or toileting independently (Schnelle et al., 1995).

Suggestions have been made that FIT would be challenging to implement in the everyday world of residential care due to the resulting increased staff workload (Ouslander et al., 2005). The cost effect analysis shows FIT is at least three times as costly as usual care, in terms of staffing. It is well documented that residential care is financially constrained, and adding additional costs for such programmes will be prohibitive unless more money is provided for this purpose. Current staffing in residential care facilities is inadequate to provide FIT to all who might benefit from and want the intervention. This is a worldwide issue, despite the growing evidence that residents benefit from such interventions. A solution to this problem, at least in the short term, may be to target the interventions to groups of individuals who will best benefit from improved function.

A few studies identified non exercise components to functional interventions; for example, Morris et al. (1999) examined a combination of nurse and participant activities of daily living training. However the sample was small and underpowered to show a difference. In order to be more representative, a larger trail in the United
States was developed. The study aimed to provide staff tools that permitted both staff and residents to take steps toward maintaining the balance between capacity to perform activities of daily living and the actual performance of these activities on a daily basis (Morris et al., 1999). It involved three discrete arms in six randomised nursing homes that included 468 residents. In the self care for seniors programme, staff in the facility was taught how to break the cycle of dependency. The second arm, aimed at reducing functional decline, used a formal structured approach providing ongoing rehabilitative care to all residents. This involved developing specific rehabilitation protocols that nursing staff linked to improving residents’ functional capacity. The third and most innovative arm used an individualised rehabilitation intervention that incorporated rehabilitation approaches into the daily nursing and resident routine. A team approach was used to review goals and objectives identified by residents. This review process involved the staff, families and residents. At completion of the 10 month study period the intervention group showed significant improvement in activities of daily living function compared with control residents (Morris et al., 1999).

Other studies that have attempted habitual activities of daily living in their interventions include social or communication elements such as walking and talking Tappen et al (2000), Tai Chi classes with a social element Choi et al (2005), prompted voiding to improve incontinence (Schnelle et al., 2002; Schnelle et al., 1995). As well as nutritional supplements Fiatorone et al (1994), and environmental adaptations designed to improve sleep Allessi (1999). Training programmes concentrating on activities of daily living such as dressing and eating have been evaluated with promising results (Brown et al., 2004; Tappen, 1994). Sackley et al. (2006) study provided increased occupational therapy to the intervention group who improved significantly compared to the control group who received usual care. It was also one of the few studies that showed sustainability over time. A novel intervention introducing indoor gardening as the functional intervention also showed significant benefits in toileting, eating and transferring from a chair (V. Brown et al., 2004).

In drawing on several studies exploring exercise programmes for residents with dementia, responses to behavioural interventions have also reported promising
results (Beck, Onrigara, Mercer, & Shue, 1999; Cott et al., 2002; Pomeroy, 1993; Tappen et al., 2000). A behavioural rehabilitation intervention delivered to severely demented nursing home residents demonstrated improved performance of morning care activities of daily living. A major outcome was the rapid response residents showed to the intervention, with most residents responding positively within five days of the implementation (Roger et al., 1999). Incorporating physical activity programmes into the residents’ daily routines has been reported favorably by residents and their families (Resnick, 2000). Both groups expressed satisfaction and preferences towards this type of rehabilitative mode in care delivery (Resnick, 2000; Simmons, 2004).

Keeping an exercise programme uncomplicated, yet effective, is key to commencing and sustaining a regularly scheduled physical activity programme residential care staff can include in their already busy days, with the potential for older people to be more apt to exercise consistently (Schoenfelder & Rubenstein, 2004). Perceived irrelevance of the intervention to the older people was argued to be a key cause of lack of success in this intervention (Karl, 1982). Developing more individualised interventions with more relevance to the residents may have better uptake. Different interventions that promote recovery and maintain independency in activities of daily living functions are needed (Hardy & Gill, 2005). These underlying principles and the motivation for researchers to actively pursue answers to this research question are central to the aims of the PILS study.

**Discussion of the review:** Overall the qualities of the studies reviewed were poor. Most of the studies were small with less than 35 participants in total, but 10 studies had 100 or more residents in the combined physical activity programmes and control groups. Only five of the studies retrieved were of a high quality standard indicated by assessor blinding and randomisation. A Cochrane review in 2008 evaluating the benefits and harms of rehabilitation interventions in long term care found similar results (Forster et al., 2008). Blinding of participation is difficult in studies of exercise interventions.
However, the use of attention controls groups (i.e. control group receives matching attention) can help minimise bias. Commonly most studies compared intervention to ‘usual care’ control groups. Just over ten studies used a social or recreational activity control such as playing cards or reminiscing. The lack of detail in a number of the reviewed trials requires caution when drawing conclusions from the results.

The interventions were varied in attempting older people in residential care to become engaged in physical activity interventions. The review suggests that strength and endurance, primarily walking activities, were acceptable to the participants, and there was sufficient evidence to conclude that it is worthwhile including these two activities in the design of a trial (Clark, Wad, Massey, & Van Dyke, 1975; Crilly et al., 1989; Lazowski et al., 1999; Tappen, 1994).

The report of a successful quasi-experimental trial comparing indoor gardening with socialising sessions is promising (Brown et al., 2004). The fact that the gardening activity found positive effects on walking in corridors suggests that residents enjoy this type of physical activity. Future design of interventions exploring activities that are more functional may also increase sustainability. Furthermore, activities need to be safe for the participating residents. More vigorous activity programmes such as bicycle training were considered dangerous Meuleman (2000) while Brill (1998) found the intervention caused a decrease in endurance post intervention.

The effect of physical performance on health related quality of life is equivocal due in part to the lack of outcomes demonstrating this effect (Forster et al., 2008). Several studies showed an increase in mood and life satisfaction (Brill et al., 1998; McMurdo & Rennie, 1993; Mihalko & McAuley, 1996) and a Tai Chi intervention group felt more confident (Choi et al., 2005). Reporting these effects provides valuable information on what activities can make a difference to participants self reported well being. Design of interventions that are effective needs further research exploring these aspects from both an individual and group perspective.

Very few of these trials delivered the intervention using a pragmatic approach, and most studies were delivered in a group setting and used research staff rather than
staff employed at the facility. Few studies included participants with cognitive impairment and most appeared to require residents to be physically active, suggesting the interventions may be less generalisable to lower functioning older people. Incorporating a functional physical activity programme using activities of daily living may be just as acceptable for the frailer group of residents who appear to be excluded from current testing of interventions. For residents with some cognitive impairment, interventions will be more meaningful and effective if they are part of everyday experience.

The reporting of adverse events was poor in most studies, making it difficult to assess the risk of injury or other adverse events associated with physical activity programmes in older people in residential care. Those that did report adverse events commented on individual effects rather adverse events or injuries associated with the training. Lack of reporting should not be considered a deterrent to developing exercise programmes, but further research that records adverse events systematically would be extremely beneficial in identifying those at higher risk of harm from interventions (Fiatarone-Singh & Mayer, 2002).

This review provides a comprehensive understanding of the complexities when considering exercise interventions for older people in residential care. Acknowledging the benefits of physical activity in the older adult is proven; however, there remain a number of gaps in the literature. One key question concerns identifying which exercise programmes residents enjoy, and which offer the most in improving quality of life. Furthermore, there is clearly a gap in the literature relating to which physical activity programmes have the most benefits in decreasing disability in very frail older populations, and how much exercise is required to maintain this improvement. Overall physical activity interventions need to provide the best outcomes for residents and finding ways to implement these against the backdrop of the culture of care currently practiced in residential care will be the next challenge.

The ageing of the population justifies increased research on older people with a view to improving function and quality of life. The most vulnerable and frail are in residential care, do not participate in physical activity programmes, and are
underrepresented in research (Fiatarone-Singh & Mayer, 2002). Exercise is beneficial to a broad range of outcomes (Carlson, 2005). The need for residential care will grow and if levels of disability could be reduced with ongoing activity, older people, staff and funders would benefit.

The review of studies suggests the need for a pragmatic trial of a physical activity programme that is functionally based, includes strength, balance and endurance exercises, and is delivered at an individual level to older people in residential care. Including an exercise moderator such as goal setting has the potential for it to be more sustainable over time and more acceptable to the frail older person in care. The trial should measure health outcomes such as HRQOL and life satisfaction, as well as measuring the effect of the intervention on physical performance.

To ensure external validity, the trial should include participants and interventions that are similar so that, if proven to be effective, the functionally based exercise programme can be incorporated into the routine of residential care settings. Finally, the trial should include a careful assessment of adverse events in both treatment groups, so that the benefits and the risks of physical activity programme are fully evaluated. These conclusions will form the basis of the key components of the Promoting Independence Living Study (PILS). The following chapters report the development of the intervention and the design of the study.
Chapter 3: The Promoting Independent Living Study intervention

Knowing is not enough; we must apply. Willing is not enough; we must do

Johann Wolfgang von Goethe, 1749 - 1832

3.1 Introduction

Many older people experience a significant decline in their functional ability following admission to residential care (Jagger et al., 1993; Mulrow et al., 1994; Rejeski & Brawley, 2006). The literature in Chapter 2 identified a number of factors that contribute to the decline and highlighted that institutionalised older people often have a greater age related loss of muscle mass and cardiovascular endurance than the general older population (Fiatarone, 1995). This is demonstrated by a lack of muscle strength or walking endurance and subsequent deconditioning (Grimby, 1995; Jette & Branch, 1985).

For those older people in residential care deconditioning due to inactivity and immobility has been found to be a predicator of functional limitations (Herbert et al., 1997). Functional limitations such as being unable to get out of a chair independently or walk down the hallway for meals are several of the consequences of residents’ deconditioning. Functional limitations have been defined as the ‘gap between a person’s capabilities and the demands of the environment’ (Cress et al., 1995). It is the narrowing of this ‘gap’ that is the focal point of the PILS intervention.

Exercise programmes which combine progressive resistance exercises, balance exercises and functional task training increase quadriceps strength, which translates into improved functional independence in being able to dress and shower independently. This has been suggested as an important way in which to help older people to regain functional performance (McMurdo & Rennie, 1993). There are several randomised controlled trials of physical training programmes for nursing care patients which reported significant strength and mobility improvements including
(Fiatorone et al., 1994; Lazowski et al., 1999; Mulrow et al., 1994; Sauvage et al., 1992; Schnelle et al., 1995).

It is unclear from the literature the level of intensity required; one study describes the intensity as high Fiatorone (1994); four describe moderate intensity Mulrow (1994) Sauvage et al (1992) Schnelle (1995) Schnelle (1996) while three identified low intensity as beneficial Mc Murdo and Rennie (1993) Schnelle (1995) Schnelle (1996) This suggests that moderate to low intensity levels of exercise may be enough to gain significant effects from some form of training programme.

What was clear in the literature review was long term sustainability of these supervised group based programmes was not the norm. Targeting the exercise programme around the resident’s daily routine may be more acceptable and sustainable for the both residents and staff. Evidence has shown that vigorous exercise is less appealing for older people in residential care so incorporating moderate-to-low intensity physical activity into a person’s daily schedule and making physical activity an inherent part of everyday living was central to the PILS intervention design.

This chapter describes the conceptualisation of the intervention and the empirical application of the physical activity programme for residents in residential care. This shaped the intervention protocol for the five rest homes enrolled in the study.

3.2 Development of the Promoting Independent Living Intervention

At the time the PIL's intervention was planned there were no published trials of repetitive activities of daily living exercise programmes in an elderly population in residential care. More recently there have been several community based trails published using functional tasks as exercise modalities (de Vreede et al., 2004; Tinetti et al., 2002). Both studies showed a significant difference in function and sustainability.
The designers of the intervention also sought guidance from the World Health Organisation’s framework for health and disability, the International Classification of Functioning, Disability and Health (2001). WHO have proposed a change to the view and planning of health care provision for clients at the individual, institutional and social levels. This is a move away from the traditional medical and social models of disability to a more inclusive model that is client centred (Wade & de Jong, 2000). This premise ensures that individuals have the opportunity to take an active role in participating in desired activities within their environment. The PILS intervention encapsulated this definition that rehabilitation would be defined as a continuing and comprehensive team effort to restore residents to their former functional status or to maintain or maximise remaining function.

The goal of the PILSs rehabilitation team was to include the residents, caregivers, other staff within the rest home facilities and the principal researcher in a programme to assist residents in restoration and/or maintenance of maximum physical and psychosocial well being.

![Diagram](image)

**Figure 3-1: Components of the intervention (WHO 2001)**
The overall intervention consists of five interrelated components: setting a functional goal, completing a functional assessment, development of a Promoting Independence Plan (PIP), monitoring the exercise programme, and goal maintenance.

3.2.1 Step one: setting the goal

Over the last decade there has been increasing recognition of the importance of providing older people with the opportunity to make meaningful decisions and choices regarding their health care, including those people in long term care facilities (Davis, Laker, & Ellis, 1997). The value of goal setting in rehabilitation settings has been more fully discussed in Chapter 2. In summary, clients are likely to make the greatest gains when therapy and goals focus on meaningful activities that will make a difference in their lives (Bandura, 1997; Locke & Latham, 2002). Motivation and goals are inextricably linked according to most contemporary psychological theories of goal setting (Austin & Vancouver, 1996).

The question posed must be how can we begin to motivate frail older people who have done little or no physical activity for a period of time and who probably have no real desire? Utilising a combination of motivational techniques might provide the impetus for motivating these older residents and offer the evidence for further studies. Contemporary literature has shown that the effectiveness of rehabilitation is dependent on and strengthened by goal moderators such as goal importance and meaningfulness (Wade, 1998).

It is well recognised that one of the strengths of older people is their ability to deal with new problems resulting from disability or illness by using their rich repertoire of adaptive strategies that are based on past experiences (Brandtstadter & Renner, 1990). Independent decision making for many older people residing in rest homes has often been minimal for a variety of reasons, as detailed in Chapter 2. It was envisaged this could be a major stumbling block for residents when given the opportunity to goal set. However, the principal researcher viewed the process of resident involvement in the PILS intervention by goal setting as a way of residents
regaining some degree of control and consequently self esteem (Bogardus et al., 2001).

An individualised flexible approach where the resident defined the goal was the chosen focus of the intervention, in order to facilitate, motivate and support change in behaviour (Allison & Keller, 2004; Bandura, 1997). Chapter Seven and Eight describe the effectiveness of the goal setting process from the resident and staff perspectives.

Residents’ goals needed to be functional and SMART (subjective, measurable, achievable, reasonable and timebound). Refer to Chapter 6 for a comprehensive list of residents’ goals. Outlined below are the steps required to ensure resident centred goals are set:

- Ensure effective communication tools are available if communication difficulties are identified, to ensure full participation in the goal setting process;
- Build rapport with the resident to explore desired functional activity/activities;
- Develop an understanding of the resident’s self-cares, leisure activities and environments in which these activities occur; and
- Negotiate a goal with the resident that relates to their desired outcome.

Several set phrases were developed to assist with this process:

- Ask the resident about functional activities they have recently ceased and would like to resume;
- Pick a cue from the resident’s conversation; for example, recently discontinued attendance at a club or social meeting external to the rest home;
- Discuss with the resident a future special family event they are hoping to attend; for example, a wedding; and
- Discuss activities that residents particularly enjoyed while living in their own home; for example, gardening.

3.2.2 Step 2: functional assessment and clinical assessment

One of the key components of the intervention development was to identify baseline functional performance of residents. Well documented baseline information assists in identifying areas where function needs to be improved, specifically to meet the goal
as well as identifying the resident’s current functional capabilities and potential capabilities. By linking the goal with functionality, it becomes part of the novel idea underpinning this intervention (or activity programme). If older people living in residential care are already compromised and reported to have lower activity levels, increasing independence with activities of daily living will need to be made attractive for the residents to want to participate.

**Mobility**

To assess residents’ mobility a standardised method was utilised. This required the residents to describe and demonstrate their ability to walk inside and outside the facility, walk up and down stairs, and types of surfaces they were able to walk on independently or with assistive devices. Balance was assessed using the Berg Balance scale (Berg, & Williams, 1995). Further tests such as range of motion, muscle strength, and functional ability in order to identify individual capabilities were completed either by the researcher or the rest home’s physiotherapist. Problems with joint pain were documented. Unsafe gait was defined and noted if the residents moved in an uncontrolled way, staggered or stumbled with or without the assistive aid. On recommendation from the Best Practice Guidelines in Falls Prevention for Residents of Long Term Care Facilities (Kellogg International Work Group, 1987) other factors such as footwear, appropriate walking aids and environmental safety were consistently assessed for residents enrolled in the intervention.

**Current physical activity and functional ability**

The types of physical activity and degree of dependence in activities of daily living were recorded. This information was gathered from a variety sources including the residents and staff. Where cognitive difficulties or poor insight were known, families in some instances and staff who had regular involvement with the residents provided information. This information served several purposes. It provided a general picture of the level of physical activity residents were currently participating in, either within the facility or in the community. This information also clarified the intensity of these regular activities. The baseline information also reported on residents’ abilities to perform activities of daily living such as showering, dressing, and toileting independently. This information provided the principal researcher with an overall
picture of the exercise tolerance and functionality currently maintained by the residents enrolled in the trial.

Clinical assessment
Since no evidence could be found in the literature on a suitable assessment tool to record all information, the principal researcher undertook the development of a multi dimensional assessment tool. The tool was tested and refined in Rest Home A. Four residents agreed to complete the clinical assessment during the pre test phase. The clinical assessment included past medical history, medication review and outcome of functional assessment. In addition, a systems review that involved cardio-respiratory, genitourinary, muscular skeletal including pain and a neurological assessment with a particular emphasis on fall related history was included in this tool. The rationale for combining the functional assessment with the systems review was to assist in differentiating underlying capability from actual performance.

Relevant information regarding residents’ cognition, affect and sleep patterns were all considered important components of a multi dimensional assessment to identify potentially reversible causes of disability, as well as greatly enhance the efficacy of the intervention. Current physical activity and environmental factors were also observed and recorded. Finally the assessment obtained relevant social information that assisted the resident and principal researcher during the goal setting task (See Appendix 1 Sample assessment tool). This was in order to provide baseline information to support the development of the individualised repetitive activities of daily exercise programme.

Given the multiple complexities and health problems that residents experience on a daily basis, some common problems have been identified in the literature as of particular relevance when designing physical activity interventions for residents in long term care (Schoenfelder, 2000). These problems, including mobility (which has been addressed in the previous section), medications, incontinence problems and general environmental issues are discussed below.
Medication review

The medication review involved recording and reviewing residents’ medication including prescribed and over the counter medication. The taking of certain medications and the interactions of such medications has been shown to have an impact on residents’ function and at times physical performance. For example, several studies have shown a significant association between the number of drugs taken and the rate of falling (Kallin, Laundin-Olsson, Jensen, & Nyberg, 2002). Other drugs of particular interest included psychotropic medications and pain relief analgesia (Lepzig, Cumming, & Tinetti, 1999). Psychotropic medication has been linked to elevated risk of injurious falls and increased daytime sleepiness (Lepzig, Cumming, & Tinetti, 1999). Less than optimal pain management for joint and muscle pain may also limit the physical activities of residents. Stiffness, joint enlargement, pain and decreased range of motion are often considered part of the normal ageing process rather than treatable symptoms.

Incontinence

Those residents assessed with incontinence problems completed a comprehensive incontinence assessment undertaken by the principal researcher [a continence nurse specialist. This assessment included a medication review, 48 hour bladder diary, and differential diagnoses of incontinence problem (for example; stress or urge incontinence as well as identified reversible causes). Reversible incontinence problems such as untreated urinary tract infections and constipation are typical causes for residents. Individualised treatment plans to improve the identified continence problems were developed. A review of continence products was also undertaken.

Environmental factors

The environmental hazards in residents’ rooms and communal areas were identified. Specific modifications included rearrangement of furniture, height adjustment of resident’s beds and lounge chairs, shower rails and back scrubbers for use in the shower. Footwear and podiatry services for those assessed with a need were also obtained.
3.2.3 Step 3: the Promoting Independence Plan (PIP)

During the conceptualising phase of the intervention the principal researcher and staff of Rest Home A explored a number of likely options that could be utilised as a template to ensure individuality of the activity programme. Following the testing of these options, one page horizontal-design repetitive activities of daily living plan was adopted; termed the Promoting Independence Plan (PIP). (Refer Appendix 2 example of PIP) The PIP documented the repetitive activities of daily living tasks, with the activities broken down into prescriptive components.

The template for the Promoting Independence Plan was standardised and included:

- Description of resident’s main health problems
- The resident’s functional goal
- Description of the exercises programme adopting a functional everyday approach
- Repetitions in bold font to act as a prompt
- Instructions written prescriptively
- Language at a level able to be read by caregivers, residents and family.
- Enlarged print

Residents’ individual plans

Each resident had a set of repetitive activities of daily living exercises developed which they could accomplish autonomously. The resident’s plan was written in lay person’s language and font size that ensured readability. The exercises were generally low impact chair based stretching, leg extensions, quadriceps strengthening and toe pointing during leg extension. Allocation of walking distances, number of times exercises to be completed on a daily basis, as well as extra activities that had been previously identified by the researcher and resident were documented on the resident’s exercise plan. A picture of the functional goal was affixed to this plan to provide a visual motivational tool (Appendix 3 Resident exercise plan).

Exercise programme

The literature reviewed in Chapter 2 demonstrated that health benefits could be gained for older people participating in physical activity programmes individually and
in group settings (Singh Fiatarone, 2002). As previously stated, for frail older people individualised activity programmes may have greater long term benefits for those in residential care. As a result the PILS intervention was developed individually and supervised by a caregiver following one-on-one training. Residents also participated in this training.

The resident’s specific exercises to improve physical function were targeted around strength, balance and endurance and focused on the major muscles of the lower limb (Mazzeo et al., 1995). The rationale for targeting lower body strengthening was driven by the evidence that lower body strength is lost at a faster rate compared to upper body strength for older people in residential care (McRae et al., 1996).

A mild to moderate strength based training programme was the central premise of the repetitive activities of daily living exercises. The intensity of the activities tended to be moderate to low supported by the evidence that has shown the value of moderate-low intensity activity, combined with the daily accumulation of increased physical activity that is associated with increased health benefits for older people (DiPietro, 2001).

Although the emphasis was on an individualised intervention, standardised activity tasks were developed. Generally an activity of daily living task comprised two sets of five repetitions carried out at each session. For upper body strengthening upper arm and shoulder strength exercises were emphasised during personal hygiene activities such as showering by providing the resident with a back scrubber. Residents were encouraged to brush own hair while standing in front of a mirror.

For the fitter residents’ resistance training consisted of using a variety of weights for upper body strengthening and flexibility (plastic milk bottles filled with water to a level of 1kg-2kg as an adaptation of a dumbbell). Two sets of five repetitions were completed at each exercise session. Weights were increased when residents could manage the 10 repetitions in a session. No weights were incorporated in lower limb activities in this intervention.
The balance capacity of the resident was challenged by utilising the principals of the ACC Otago exercise programme balance subset (Campbell et al., 1997). These were adapted to be incorporated as part of the functional balance training. The exercises focused on motor tasks such as standing, moving from a sit to stand position, walking a short distance and turning around, and knee bends.

Exercises to improve safe transferring focused on finding solutions to specific resident’s problems, for example learning strategies that would allow independent transfer on and off the bed. In order to accomplish these transfers bed mobility exercises were incorporated in residents’ plans if transferring was an identified problem.

Walking was performed to improve endurance and gait stability. This was assessed at an individual level and walking time allocation was dependent on a number of factors which included previous activity level, exercise tolerance, shortness of breath, walking speed, and use of walking aids. Similar walking interventions designed to maintain or improve ambulation among nursing home residents have been shown to be effective (Schnelle et al., 1995; Tappen et al., 2000)

For most residents the walking activity was adapted to an everyday motor activity; for example, walking an extra corridor length to and from the dining room for meals. Incremental increases of 10 minutes per episode of activity challenged the individual, with a suggested aim of 30 minutes daily. Although the emphasis of training was individual, with respect to type as well as level of difficulty, group activity that incorporated walking was encouraged primarily due to time constraints of the caregivers. (Refer to Chapter 7 and 8 for details regarding time management).

Those participating in a walking group specifically designed for residents enrolled in the study ventured outdoors. These walking groups had routes designed that included such things as line mapping that identified the safest route to walk outside in the facility grounds. Park benches were placed strategically around the walk ways for residents to rest during their walking activity. For safety, signs alerting through
traffic to ‘watch for walking older people’ were also displayed within the grounds of
the participating rest homes.

In addition to participation in the PILS programme residents continued to attend
their usual organised physical activity programmes, for example arthritis exercise
classes or Tai chi. These activities were part of the daily routine of the rest home
organised by the activities or divisional therapist.

3.2.4 Step 4: monitoring and adjusting the functional activity plan
In an inactive older population evidence has shown that a training load of sufficient
level has the potential to improve function (Fiatarone-Singh & Mayer, 2002). Given
this premise, the prescribed repetitive activities were initially dependent on the
resident’s baseline functional ability. Monitoring and increasing functional activity to
higher intensity were undertaken at review meetings attended by staff and residents.
The increments of activities generally increased by five repetitions; for instance a
person comfortably achieving 10 sit to stands at each session would increase
repetitions to 15. Walking times increased by 10 minute increments.

Goal maintenance
As well as adjusting the repetitive activities of daily living exercise programme, goal
maintenance became an integral part of the PILS intervention. Regular goal
maintenance review meetings involving the resident, their caregiver and the principal
researcher were held to monitor the goals set by individual residents. Their primary
purpose was to discuss progression of goal attainment, as evidence has shown that
goal striving must be revisited regularly in order to avoid goal abandonment
(Bandura & Schunk, 1981). These meetings provided a focal point to establish new
goals or increase resources toward the original goal by either increasing or modifying
one’s effort in the short term. Ongoing verbal encouragement and reinforcement was
provided daily by the caregivers as they assisted the residents in the repetitive
activities of daily living exercise programme.
3.2.5 Step 5: monitoring adherence

Adherence is suggested as being easily thwarted in populations undertaking any exercise programme, and it is well documented that non compliance or haphazard compliance is an issue for people in residential care participating in exercise programmes (Rydwik et al., 2004). Cognisant of this issue PILS intervention guidelines were developed to encourage adherence to the physical activity programme. This was considered essential due to the anticipated increasing frailty and ongoing health problems of the residents enrolled in the trial. Furthermore it provided a system to standardise modification of the individual exercise programmes. These guidelines dealt with ways to continue the programme when residents expressed fear and anxiety, how to manage pain due to the exercise programme, and how to recommence the exercises following an acute health event.

Each enrolled resident had a lead caregiver who was responsible for ensuring compliance to the intervention (Barraclough & Fleming, 1986). To influence this behaviour the researcher met with both caregiver and resident on a weekly basis to monitor and provide support. The first meeting involved demonstrating the physical activity programme to resident and caregiver with the underlying principal of encouraging the residents to ‘do’ rather than ‘do for’. The ‘on the job’ training was consistent across all enrolled rest homes and was considered one of the most important components of the intervention, as other studies have found that with careful training of caregivers dramatic improvement of residents can result (Feldman & Kane, 2003). Subsequent meetings with individual residents remained weekly for the first month, then fortnightly for the remaining three months. Meetings times were generally thirty minutes for the first meetings and fifteen to twenty minutes at subsequent meetings.

Recording compliance

Only two of the five rest homes involved in the study agreed to undertake a formal documentation process to measure compliance (Appendix 4 sample compliance check list). This took the form of a check list to be marked each day at the completion of the prescribed activities undertaken by the residents. In rest home 2 the compliance check list was held in the corridor of the intervention wing, while in
rest home 3 it was held in the Nurses’ station. Recording compliance was poor despite concerted efforts by nurse managers and the research team to improve this during one to one meetings with caregivers and at the regular weekly staff review meetings. Lack of time or forgetting were the main reasons for poor record keeping.

Staff meetings
Weekly meetings were held and attended by rest home staff and the principal researcher. The agenda set for these meetings included reviewing residents’ progress, modifying PIPs accordingly, and exploring non compliance issues. Newly enrolled residents’ PIPs were presented and discussed. Staff issues such as time management and other relevant matters were also explored at these meetings. Physical environmental issues such as equipment, or layout of facility were also explored, to ensure safety of residents. The times of these meetings varied across each site; some rest homes preferred a separate review meeting later in the morning, while other homes linked it to a regular activity such as handover.

Staff education
The educational component of the PILS intervention involved a series of six 60 minute sessions. Each session had specific foci and was delivered using a case based teaching style. The content of the training sessions included anticipated health benefits for residents and expected benefits for staff; specific skills and techniques needed to adapt residents’ functional activities such as showering and dressing into the intervention; the principles of rehabilitation that underpinned the intervention; types of exercise that may improve function; techniques to motivate and strengthen self efficacy for residents; and how to overcome challenges for both residents and staff. Each session also included evidenced based information on falls, medications, normal ageing, and health assessment in the older adult.

In summary, the intervention incorporated a goal setting repetitive activities of daily living programme to improve function and quality of life for older people in residential care. The intervention was developed by the researcher with support of the residential care staff, delivered by the caregivers, and supported by the research
team. The following chapter discusses the Methodology utilised to examine the effectiveness and feasibility of the PILS intervention described in this chapter.
Chapter 4: Methodology and methods

[It is] far better to have an approximate answer to the right question than to have an exact answer to the wrong question

Tukey, 1962

4.1 Introduction

The literature reviewed in the previous chapter on physical activity and interventions, for older people generally and in relation to older people living in residential care, has highlighted that there is a dearth of research on effective trials in community dwelling older people, and even less evidence of well designed trials in residential care settings. Poor physical function has been shown to have a major influence on the functional status and disability of older people (Thomas, 2001), and the greatest impact on those living in residential care (McRae et al., 1996).

The literature also identified that it is unclear how best to deliver physical activity programmes in residential care in a way that is both motivational for the residents and achievable by the residential staff care. Early literature suggests that interventions that incorporate activities of daily living might be one way to overcome these barriers. In order to investigate this intervention in New Zealand a mixed methods design using both quantitative and qualitative approaches was employed, reflecting methodological and data triangulation to explore the feasibility and impact of a structured and repetitive Activities of Daily Living (ADL) activity programme on function and quality of life for older people in residential care.

After considering the nature of the study and resulting data, a cluster randomised controlled trial known as the Promoting Independent Living Study (PILS) was developed to examine the effectiveness of the intervention. Interviews and observation were used to gain insight into aspects of programme uptake and to understand the impact of the programme and the meanings that were not captured by the quantitative methods.
Chapter 4: Methodology and methods

The results gained from this original study will provide a significant contribution to the existing knowledge identified in Chapter 2 regarding the benefits that older people in residential care may gain both physically and in their quality of life.

The methodology is described in detail in this chapter. Phase one describes the methods utilized in the randomized controlled trial, while phase two describes the qualitative methods used.

4.2 Aims and Objectives

Phase 1: Promoting Independent Living Study: a randomised controlled trial

This study sought to establish, in residents of rest homes in New Zealand, the effectiveness of an activities programme in improving quality of life, functional mobility, and activities of daily living.

Phase 2: Experiences of participating in the Promoting Independent Living Study

There are three linked objectives in Phase 2:

1. To establish the factors contributing to the success and failure of the intervention with regard to both the residents and staff;
2. To explore the impact of an activity of daily living rehabilitation intervention on the factors that may contribute to the motivation of the resident; and
3. To explore capacity building and changes occurring within the rest home facility as a result of the programme implementation.

4.3 Theoretical framework

4.3.1 Gerontology research

This study is grounded in gerontology as its principal discipline. Gerontology codifies knowledge with respect to later life. It includes the search for meaning about what it is to be old in contemporary society, and explores the issues and directions facing individuals and communities at this time of their life (Tulle-Winton, 1999) Theory development has an important function and is usually tied to paradigms associated
Chapter 4: Methodology and methods

with specific disciplines. Nolan and Cooke (2000) consider that theory development within gerontology has been narrow. However it has been suggested that it is not always necessary to build new theories; it can be useful to support developed theories. Theory development would improve gerontology research by elucidating the context in which it is conducted (Campbell, Feldman & Kane, 2003; Nolan & Cooke, 2000).

A small but growing body of research is seeking to contribute to this expanded approach by highlighting the benefits of mixing theories and/or methods generally associated with different paradigms. Consequently, the exploration of this research question is based on a number of underlying assumptions that will bridge the gap between the interpretive and functionalist paradigms.

The distinction is drawn between the empirical perspective, which tends to involve positivist conceptions about facts and fact gathering, and a developmental evaluative perspective that explores more than one participant’s conceptions and meanings. This study is located within this broader discourse, combining qualitative and quantitative methods to address the aims of the study.

Contextually, the experimental phase tested the hypothesis that function and quality of life would improve over time for older people residing in long term care as a result of applying an activity focused intervention. The developmental (second) phase of the study explored the different perspectives of the older people who were the target of the intervention, as well as the experiences of staff including managers, registered nurses, enrolled nurses and caregivers.

4.3.2 Mixed methods in gerontological research
Methodological development in gerontology research over the past decade has been characterised by increasing pluralism (Teddlie & Tashakkori, 2003). A study that incorporates qualitative and quantitative design, often termed mixed methods research, uses data collection and analysis techniques in parallel or sequential phases (Adamson, 2006). Multiple data gathering methods provide evidence about older
people in multiple ways, commonly termed triangulation, which can be used to reduce bias (Patton, 2002).

Several qualitative researchers emphasise that triangulation is not just another method but should be viewed as “essentially a meeting and meshing of different boundaries for a given topic which enables questions to be posed in new ways leading to fresh insights and understandings” (Kellaher, Peace, & Willocks, 1990).

Triangulation endeavours to ensure a sharper focusing upon the reference points around which this research has been constructed. A major problem in investigating causality is that everything that happens has multiple causes (Patton, 1990). Preventing confounding is problematic in research in a number of health care settings, particularly long term care settings. At times there is muddiness in the picture so that it becomes difficult to discern what is causing what to happen. For example, gerontology researchers conjecture that older people who are 80 years old are different from 90-year-olds, and those life events, disease, functional impairments and the environment impact a great deal upon variables relevant to older people (Bowsher, Burnside, & Gueldner, 1993).

Research methods unique to frail aged populations are required, and these are essential to the development of knowledge. This deficit has been clearly highlighted by the review of physical activity intervention trials for the frailer older population in residential care. For example, the review identified a number of exercise intervention studies in residential care that only included older people who were physically fit prior to enrolling in the trials. This prevents generalisability from occurring when frail older people are increasing in such settings.

Notwithstanding these potential problems many authors Gomm (2000; Gubrium, 1995, Kellaher (1990) support mixed methods as they can achieve the goal of understanding what is particular and general about the research.
Rowles and Reinharz (1988) summarise what this study sets out to achieve:

*Gerontology research that is experimental in nature is concerned with describing patterns of behaviour and processes of interaction as well as revealing the meaning, values and intentionality’s that pervade older peoples’ experience in relation to things ‘old age’. In addition, qualitative gerontology seeks to identify patterns that underlie the life works of individuals, social groups and larger systems as they relate to old age…. [Qualitative research] attempts to tap the meanings of experienced reality by presenting analyses based on empirically and theoretically grounded descriptions*

Rowles & Remharz (1988, p. 6)

The growing field of gerontological literature has provided support in designing this study, providing ideas and methodology that account for the complexities and practical challenges of carrying out trials with frail older people in long term care (Nolan & Cooke, 2000; Phillips, 1992).

### 4.3.3 Research in residential care: Is it different from undertaking research in other settings?

The scope of residential clinical and health service research is a multidisciplinary field of scientific investigation which focuses on identifying the most effective ways to organise, manage and deliver high quality long term care to produce an optimal quality of life (and other outcomes) for those who require ongoing care for chronic illness and disability (Feldman & Kane, 2003). Residential care research shares many of the characteristics and problems of health services research, and also adds a few of its own. However, this research sits on the border between what has been traditionally viewed as medical care (a term broadly used to include nursing and related disciplines as well as medicine) and social or supportive care (Kane & Kane, 1987).

With health service research comes the notion of a therapeutic and possible curative outcome, whilst long term care management implies compensating for dependency in as ‘normal’ a manner as possible, with little or no expectation of changing the underlying problem that caused the dependency. The classic study by Goffman (1968) that explored the worlds of institutions provides the basis for this notion: Regimentation and routine feature prominently in what he terms ‘total institutions’:
All phases of the day’s activities are tightly scheduled, with one activity leading at a prearranged time into the next, the whole sequence of activities being imposed from above by a system of explicit formal rulings and a body of officials.

Goffman (1968, p. 6)

Several authors have challenged this aspect of residential care; for example, Reed and Payton (1998) state that this definition is too narrow, providing little variance. Older people can still be actively involved in their personal lives, which shapes the way they live and are cared for within such institutions. Nevertheless, when routines remain the key feature of institutions such as rest homes, structured dependency will undoubtedly occur (Townsend, 1962).

In long term care, as in health care, overall elements of technical quality compete with concerns about the broader aspects of what has been commonly called ‘quality of life’. As recipients of long term care are often on a downward trajectory, and full recovery of health and function is unlikely, long term care research is not accorded the prestige that perhaps more medical care research is given.

It has been proposed that long term care research can affect practice in a number of ways: firstly, by developing new concepts and methods that help define fundamental goals; secondly, by designing practical tools that comment on the nature and magnitude of problems to be addressed and the outcomes that are achieved; thirdly, by assessing interventions and strategies for improving care; and finally, by evaluating new models, programmes or systems of service delivery (Feldman & Kane, 2003; Kane & Kane, 1995). These concepts strengthen the proposed aims and objectives of this study. Figure 2 sets out the design of the study and the interrelationships among the elements.
Chapter 4: Methodology and methods

Mixed Methods Study

Phase 1: Quantitative

RCT
Novel intervention and to test the acceptability and feasibility of the interventions

Ethics Approval

Recruitment of Rest Homes

1, 2, 3, 4, 5

Recruitment of Residents

Sample Randomisation

Intervention  Control

Baseline Assessment of Residents

1st Reassessment of Residents

2nd Reassessment of Residents

Statistical Analysis

Mixed Paradigm

Phase 2: Qualitative

Experience of being involved in PILS

Ethics Approval

Recruitment of Participants

Residents

Caregivers

RNs

Managers

In depth Interviews

General Inductive Analysis

Themes and Categories

Figure 4-2: Study design
4.3.4 Sampling frame

Phase 1

The sampling frame for this study required recruiting rest homes as well as residents in the Greater Auckland area, New Zealand. Rest homes in the wider Auckland area, including Waitemata and Auckland District Health Board areas, were eligible for inclusion in the study. In the absence of evidence and information on the development and implementation of physical activity interventions in New Zealand rest homes, a study involving five rest homes was proposed by the researcher.

In order to minimise bias, each residential care facility in this study was selected to broadly represent overall rest home ownership, so included facilities with differing ownership structures. We term these: for profit - chain, that is, facilities that are part of larger organizations where the owners are distant from the sites; for profit - owner operator that is privately owned facilities where the owner is on site and involved in the management processes; not-for-profit, welfare and religious facility and a community trust.

As well as type of facility, the size of potential rest homes was to be between 40-50 beds, commonly termed a medium sized facility, excluding larger facilities with 100 beds or more per site, and smaller facilities of 10-30 beds. The rationale for this was that medium sized rest homes would provide a sufficient sample size of both residents and staff to test this intervention which would not be achieved in smaller facilities, while avoiding the complexity of larger facilities.

Studies from other countries support this rationale and have shown that study implementation of a physical activity programme has been more successful in smaller residential care facilities (Schoenfelder & Rubenstein, 2004). Primarily this is because staff and residents in these types of facilities are more likely to have clear lines of communication and senior management are more closely involved with care.

Phase 2
Establishing a sampling frame for phase 2 of the study, a non-probability and purposeful sampling approach was adopted. Davidson and Tolich (1999) suggest this type of sample population be sought deliberately, because it can be judged to be typical of the population of interest to the researcher. Furthermore Patton (1990) proposes that the logic and power of purposeful sampling lies in selecting information rich cases. Information-rich cases are identified as those from which a researcher can learn a great deal about the issues of most relevance to the purpose of the research.

### 4.3.5 Setting

Rest home selection was voluntary rather than by random selection. The rationale for self selection related to the ability of the rest home to partially fund the study, and to rest home managers who indicated willingness to change and demonstrated motivation to meet the study implementation requirements. In other words, Nurse Managers were partly self selecting and partly selected by researchers because they reflected characteristics that were similar across other rest homes. This is often described as a purposive sample that is ‘a sample in which respondents, subjects, or settings is deliberately chosen to reflect some features or characteristics of interest’ (Patton, 2002, p. 181)

In this instance, selected rest homes practiced under the same Health Care Standards, with similar staffing and acuity of residents. Several Nurse Managers approached and volunteered their facility following conference proceedings in which keynote speakers discussed the need to increase physical activity for residents in long term care.

Initial contact with potential residential care facilities was by telephone. Each facility was visited by the researcher once interest was indicated and during this visit, information regarding the study was given in both written and verbal forms to the Nurse Manager. A total of five rest homes consented to participate in the study.
4.3.6 Rest home and participants' eligibility and exclusion criteria

Table 4-6: Rest home and participant eligibility and exclusion criteria

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1: Rest Homes</td>
<td><strong>Exclusion:</strong> Rest homes providing secure dementia care, young disabled care, and private hospitals were excluded from the study as the residents in these facilities would not have been able to participate in the planned activity based intervention as they are likely to be more demented and dependent than rest home residents.</td>
</tr>
<tr>
<td>Phase 1: Residents</td>
<td><strong>Inclusion:</strong> To be eligible to participate in PILS the residents had to meet the following criteria; be over the age of 65 years, and have resided in the rest home for more than two months. The rationale for excluding residents of less than two months related in part to the resident’s need to ‘settle’ into the facility. To be eligible residents were required to be fluent in the English language (to allow completion of the questionnaires). Regardless of cognitive or physical ability, residents were eligible to participate. In total 175 residents were eligible across the five rest home sites. <strong>Exclusion:</strong> Residents were excluded if they were physically/acutely unwell, terminally ill, quadriplegic or non English speaking. A total of 33 residents were not eligible Table 1 illustrates the recruitment and response rate of residents by individual facility.</td>
</tr>
</tbody>
</table>

4.3.7 Sample size and power

Sample size is considered to be a fundamental design feature of a properly controlled clinical trial. Friedman (1998) states ‘clinical trials should have sufficient statistical power to detect differences between groups considered to be of clinical interest’ (p. 150). A number of issues should be considered when estimating sample size. These include: understanding of the primary study outcome, determination of a minimally important effect of the intervention, and specification of a statistical test or confidence interval method along with its directionality, that is one or two sided (Donner & Klar, 2000).

Calculation of sample size was based on the outcome measure SF-36, a measure considered to be adequate to answer the primary hypothesis. Power calculations are necessary to be certain that the sample size of the study is sufficiently large, so that
statistical tests can detect the differences that they purport to find (Friedman, Furberg, & DeMets, 1998). To show that a clinically relevant change of three points in the physical component score of the SF-36 was not due to chance alone, we required a sample size of 67 in each group (90% power, 0.05 alphas). This was adjusted for the design effect of a clustered sample using an estimated intra-class correlation of 0.01 for the physical component score. This number of people also resulted in 96% power to detect changes in the mobility measure, Elderly Mobility Scale (EMS), and 95% power to show change in the Life Satisfaction Index –Z (LSI-Z), the life satisfaction measure. Independent advice from a biostatistician was sought to provide statistical advice on the clustered sample design for this study.

### 4.3.8 Cluster randomisation

The rationale for choosing cluster randomisation, rather than individual randomization for this study is driven by the notion that in residential facilities, individuals are not independent from each other. The intervention entailed working with caregivers and other staff in the rest home. As this would necessarily change their approach to care for residents, there was a strong likelihood of contamination to residents in the control group, should individual randomization be undertaken.

Randomising by cluster, in this case, ward or wing of the home, meant that staff would work with either all intervention or all control group participants and minimise the chance of contamination of the control group. Elley, Chondros, & Kerse (2005) identified several difficulties pertaining to randomizing at the individual level in group settings. Firstly, the setting for the intervention being tested is rest home facilities and these operate in a structured way which cannot be ‘turned off and on depending on which experimental group the participants are group’ (Elley, Chondros, & Kerse, 2004).

Secondly, the intervention can be affected by the close proximity of control participants; for example, residents living beside each other could become either an intervention or control participant. This may lead to the control participants receiving the intervention by mistake or being at risk of contamination. Contextually, the term contamination refers to the proportion of individuals in the control group
that are exposed to the intervention. In residential facilities, this can occur by the residents discussing the intervention between themselves, with researchers not being aware of the possibility of control participants receiving some of the intervention.

Contamination could also occur when staff behaviour and care practices are carried out on control participants. One of the main concerns regarding contamination in a research site is that it dilutes the effect of the intervention which may lead to a type 2 error, where the study shows no effect when in fact one actually exists. Prior to the trial rest homes operated a rotating staffing pattern across the facility. To minimize the risk of contamination we advised management of the participating rest homes to roster staff to the same wing during the trial. Maintaining usual cares in the control wings was essential but also problematic as staff, particularly the caregivers, may feel less valued and under supported.

An earlier study by Cook and Campbell (1979) reported potential problems with control residential care homes citing resentfulness felt by staff who perceived they now had less desirable roles. To minimise this effect the control staff and residents were treated as a waiting control, in that the intervention was to be offered to control wings at the completion of the study.

Despite the evidence supporting cluster randomized trials, limitations include the impact on sample size and this can be large depending to some degree on the size of the clustering effect and the number of clusters available (Campbell & Grimshaw, 1998). The other confounding issue relates to the statistical techniques required to analyse cluster randomized trials as it must take into account the clustered nature of the sample selection and randomisation (Campbell & Grimshaw, 1998; Elley et al., 2004). In summary, the advantage of random allocation in cluster randomization trials offers assurances that selection bias has played no role in the assignment of clusters to different interventions.
4.3.9 Recruitment process

Phase 1

Two similar wings per facility were identified by researchers and management staff and allocated to either the intervention or control group by the toss of a coin performed by an independent researcher. This elementary form of randomisation is referred to as simple or complete randomization (Friedman et al., 1998). Following allocation, probability sampling was used to select potential resident participants. Utilisation of residents’ lists in the enrolled rest homes provided the sampling frame for potential resident participants in this study. Potential participants in each of the selected wings of the rest home were initially approached by the nurse manager of the facility and invited to participate in the study. Information sheets were provided to each resident.

Each resident who agreed to participate was then approached by the researcher to be formally recruited as a participant. For those residents who were unable to provide verbal consent, personal contact by the Nurse Manager was made to their next of kin or guardian to seek consent to participate in the study. A consent form accompanied the information sheet concerning the study; two copies were signed by the participant and/or next of kin. The participant kept one copy and the researcher retained the second, stored in a secure facility at the University of Auckland for a period of six years. Recruitment at phase one yielded 149 residents willing to participate in the trial.
Table 4-7: Number of residents recruited by rest home in the Promoting Independent Living trial

<table>
<thead>
<tr>
<th>Rest Home</th>
<th>Total number of residents</th>
<th>Not eligible</th>
<th>Eligible residents</th>
<th>Refused</th>
<th>Total recruited</th>
<th>Recruitment rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>54</td>
<td>7</td>
<td>47</td>
<td>5</td>
<td>42</td>
<td>89%</td>
</tr>
<tr>
<td>2</td>
<td>44</td>
<td>6</td>
<td>38</td>
<td>6</td>
<td>32</td>
<td>84%</td>
</tr>
<tr>
<td>3</td>
<td>44</td>
<td>7</td>
<td>37</td>
<td>6</td>
<td>31</td>
<td>84%</td>
</tr>
<tr>
<td>4</td>
<td>32</td>
<td>7</td>
<td>25</td>
<td>3</td>
<td>22</td>
<td>88%</td>
</tr>
<tr>
<td>5</td>
<td>34</td>
<td>6</td>
<td>28</td>
<td>6</td>
<td>22</td>
<td>79%</td>
</tr>
<tr>
<td>Total</td>
<td>208</td>
<td>33</td>
<td>175</td>
<td>26</td>
<td>149</td>
<td>85%</td>
</tr>
</tbody>
</table>

Note. Rest home names have been changed to protect confidentiality.

Phase 2
Participants were selected on the basis of their ability to contribute insights about participating in PILS. Residents who had engaged in the intervention and those who were less engaged were selected as potential interviewees as well as staff involved in the intervention wings. The residents and staff who were approached agreed to be interviewed. Each participant was given an information sheet and consent form to sign. At several points during the preliminary explanation, the researcher stressed to the participant that they could refuse to participate or withdraw at any stage during the interview. In-depth open ended interviews were conducted with nurse managers (n=5), registered nurses (n=6), and caregivers (n=13) from the five rest homes. To establish the range of views about the meaning of the physical activity programme residents who participated in the intervention (n=18) agreed to be interviewed (see Table 8). In total, forty two staff and residents consented to participate in a semi-structured interview.
4.3.10 Ethical approval

Every randomised control trial requires assurance that the proposed study design meets commonly accepted ethical standards (Donner & Klar, 2000). The challenge of designing an ethical randomized controlled trial requires balancing the potential benefits and risk of harm faced by individual participants with the potential long term benefit to subjects and to society at large. The ethical issues that arise for older people are no different from conducting research with younger adults. However, just as research in any population has its own relevant issues, research with older people in residential care is associated with a number of factors to be considered prior to designing and implementing a study. In brief these factors include the physical, mental, social, economic and psychological conditions of older people which, together with the special circumstances in their setting, make them more vulnerable to exploitation (Gilhooly, 2002; Lebowitz, 2004; Reich, 1978).

A paradox exists for older people who live permanently in residential care; on the one hand, research is designed to be generalisable and the expected positive or negative outcomes will contribute to medical science in a way that will be beneficial to the health of older people in general. On the other hand, an individual in the control group may not benefit from the research directly, and this is seen as questionable in an ethical sense (Davidson & Tolich, 1999; Reich, 1978). There must be some uncertainty about the efficacy of an intervention to justify the use of randomization in testing it. While this uncertainty, also about safety, justifies a

Table 4-8: Numbers recruited for phase 2

<table>
<thead>
<tr>
<th>Rest Home</th>
<th>Nurse manager</th>
<th>Registered Nurses</th>
<th>Caregivers</th>
<th>Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
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<td>1</td>
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<td>4</td>
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<tr>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>6</td>
<td>13</td>
<td>18</td>
</tr>
</tbody>
</table>
comparison group with no intervention a wait list control group does address this ethical dilemma to some degree. The waitlist control group receives the intervention, but only after its effect had been tested and assessed in the participants assigned to the intervention group. For practical reasons, this should only be utilised for trials having a relatively short follow up period (Friedman et al., 1998). In the PILS study the control group received usual care; however they were offered the opportunity at the time of recruitment to participate in the goal setting and physical activity intervention at the completion of the trial that is a waitlist control equivalent design.

The high incidence of physical and cognitive impairment in institutionalized older people requires careful consideration in inviting them to participate in a physical activity intervention. The risks of the research should be defined prior to commencing the investigation. While certain safeguards have been put in place to manage risks, such as obtaining informed consent, it has been argued by gerontological ethicists that institutionalized older people should not be excluded from research just because they live in such facilities (Nesselroade, 1989).

The matter of competence of the older person to give informed consent is often argued as being variable (Gilhooly, 2002). For instance, an older person with moderate dementia may be considered competent to answer simple questions about when she would like her shower and what she would like to wear, but not competent to consent to take part in a randomized controlled drug trial (Gilhooly, 2002). In these circumstances competence would appear to be task-specific. During protocol development, careful consideration regarding criteria for competency to consent was undertaken. This was a two step process. It was necessary for the researcher to be satisfied that the older person had an accurate and complete understanding of the research question and aims. If doubts were realised by either the researcher or staff at the facility, informed consent from guardian or next of kin would be sought.

**Assessing and reporting adverse events**

Expected and unexpected effects of a physical activity intervention are to some extent unknown; consequently, unanticipated problems need to be monitored and reported on. The challenge of designing an ethical randomized controlled trial
requires the researcher to balance the potential benefits and risk of harm faced by individual participants, with the potential long term benefit to older people in general, if the study is to be successful.

Most measures of adverse events make use of a series of statements or criteria which operationalise the definition by describing a series of circumstances or instances which are seen as an adverse event (Walshe, 2000). There has been little research to date that has established if there are subgroups in residential care for whom the risk of harm is greater than the benefit they will gain from the intervention; for example, the very frail (Forster et al., 2008). A study of community dwelling older people recently discharged from hospital Latham (2003) showed a self reported increase of muscle fatigue and back pain secondary to an activity programme involving muscle strength and resistance training.

Some studies have reported that when older people increase physical activity they may initially experience some increased muscle soreness and fatigue directly attributable to the intervention (Messier et al., 2000). By monitoring these effects on a monthly basis, particularly the frequency and severity, it was hoped that participants might improve their long term exercise tolerance and subsequent compliance by modifying or reducing the exercise programme during this phase.

As a novel study, the researcher wished to minimise the risk in order to improve the overall effects of the intervention. Donner and Klar (2000) commented: ‘minimal risk means the probability and magnitude of harm or discomfort, anticipated in the research is not greater than those ordinarily encountered in daily life for the participant’ (Donner & Klar, 2000, p. 407).

The research nurse employed specifically to collect data relating to adverse events on all enrolled residents remained blinded to group allocation. Data was collected on a monthly basis for the six month trial period. This evaluation required participants to self report any muscular aches and pains in the lower extremities, the number of falls and any increased fatigue over the previous month (see Appendix 7). In some
instances, when participants were unable to recall such events, the researcher sought further information from the nurse manager.

Consent

Ethics approval was given by the Auckland Ethics Committee (Northern Y) 2001/264 10/02/03 prior to implementing the physical activity programme. (Appendix 5). Prior to commencing the study, permission was gained from the Nurse Manager on behalf of each facility. A consent form with information concerning the study was distributed and two copies were signed. One copy was retained by the facility nurse Manager, the other by the researcher. During the second year of the study, permission was sought and gained from Auckland Ethics Committee (Northern X) AKX/02/00/269 to conduct semi-structured interviews with staff and residents from the five enrolled rest homes. (Appendix 6)

4.4 Study procedures

Basic demographic data was collected by the research nurse at baseline prior to randomization, including the residents’ age, sex, ethnicity, medical history and medications. Due to the nature of the intervention, participants and those delivering the intervention could not be blinded to the group assignment. However the research nurse remained blinded to group allocation assessing outcomes, and allocation concealment was maintained throughout the study. The research nurse was trained in standardized assessment, application of research measuring tools and recording data reliably and used a standardized questionnaire and procedures to carry out assessments at baseline, three and six months follow up.

During training the research nurse was reminded of several issues that might occur that were beyond her control. Firstly, the possibility that data is affected by participants learning from each assessment (Friedman et al., 1998). Secondly, that as participants become accustomed and feels comfortable with the researcher; the person may work harder during subsequent assessments to please the researcher (McMurdo & Rennie, 1993).
The research nurse undertook to complete all repeat assessments at the same time of day as the baseline assessment (whenever possible). Additionally, the baseline assessment and the two follow up assessments were systematically performed. The order of data collection is presented in Table 9.

Completion of the physical performance measures in the frailer participants was highlighted as a possible problem. The research nurse was reminded to discontinue the activity if the participant experienced any pain or discomfort when attempting the measures the following day. During implementation of the intervention in rest home 3, the research nurse became gravely unwell and was unable to continue her employment. A second research nurse was trained by the researcher and remained the sole research nurse until the end of the study.

The intervention is described in Chapter 3 a brief précis is presented here. The functional based activity programme (PILS) consisted of a prescriptive activity programme developed and tailored to meet the resident’s identified goal. The activities were designed to increase the resident’s strength, balance and endurance through increasing the usual level of activity by repeating activities of daily living. The repetitive activities included bed mobility, sitting to standing, and increased walking distances. The emphasis throughout was resident centred and followed the principle that incrementally increasing repetitions of exercise would increase activity tolerance and support goal attainment.

The individualised programme was explained to both resident and caregiver with an emphasis on how the activities would support the resident to achieving their functional focused goal. A prescriptive care plan was prominently displayed in the resident’s room and included in the resident’s case file for reference. The care giver was responsible on a daily basis for ensuring that the residents carried out their activity programme.

The control group received only usual care. Usual care was defined as activities that would ordinarily be provided by the rest home. This would include caregivers providing assistance with showering, dressing and transferring within the facility.
Residents would attend social activities provided routinely in the facility including newspaper reading, outings in the van, and seated exercise programmes.

In considering the selection of assessment tools to demonstrate reliable and valid outcomes for this frail older group of people, several important issues needed to be considered. The intertwining of physical, psychological, and social well being in the older person makes independent measurement of physical function difficult. In support of this view, a study of frail community dwelling older people found it was difficult to distinguish physical functioning from psychological or social functioning (Stewart & King, 1991). This finding was deemed relevant and helpful for the researcher in identifying appropriate assessment tools that would encompass the complexity of health and social problems often considered interrelated in older people in residential care.

It has been suggested that a wide battery of assessment scales is needed to provide a broad understanding of the impact of the physical activity intervention on an older person’s life. However, Kane and Kane (1988) suggest that the choice of assessment measures can be one of the greatest perils for health researchers in gerontology, and a ‘cafeteria’ approach to selecting measurements can occur, leading to a selection of measures that may not always be suitable. For instance, they may be designed for a different population or may not measure the aspects of the attribute of interest that are of concern to the project at hand.

To address some of these measurement selection issues, the formation of an operational committee to guide the researcher in outcome measure selection was set up. This group’s expertise was mainly related to research in physical activity; however, one of the group members had previous experience of residential care research.

Several factors were considered when selecting the outcome measures. Firstly, the measures had to be relevant to the assessment of health and functioning in older people. Secondly, they had to access health at different levels, including functional limitations, mobility and health related quality of life. All measures had to have good
psychometric properties and with well established reliability, validity and responsiveness to change in older people. The measures needed to be completed in a relatively short amount of time to minimise the burden on the resident.

Overall the instruments designed to measure individual and/or group health status that had good reliability and validity were reviewed. A good level of sensitivity of the assessment tools is vital to be able to detect changes over time. A recent systematic review Rydwik (2004) highlighted a series of assessment measures that combined different aspects of mobility, balance, strength and flexibility.

Outcomes that reported function in activities of daily living were commonly featured in studies examining physical activity programmes (Rydwik et al., 2004). These types of scales, however, may not be appropriate for detecting differences of a group level in institutionalised older people with a number of co-morbidities. The assessment tools employed for this study included measures that would be markers for resultant impact of the repetitive activities of daily exercise programme on function and quality of life of participants in this trial. These included the Elderly Mobility Scale, Timed Up and Go, Life Satisfaction Index Z, SF-36, EuroQol-5 and the two item Fear of Falling tool. The Abbreviated Mental Test Score and the Barthel Index were administered for descriptive purposes.

In order to understand the population under study, baseline demographic information was collected by the researcher following consent. This included the resident’s age, gender, marital status and ethnicity, support needs level, current medications and co-morbidities, and was recorded from the resident’s case notes. The measures used are described below, along with a discussion of limitations and validity.
4.4.1 Quantitative data collection

Several tools were utilised in the data collection, they are described here.

Cognitive function

The Abbreviated Mental Test Score: The Abbreviated Mental Test Score (AMTS) was administered at baseline in order to understand the cognitive state of the enrolled participants. The Mental Test Score (MTS) was originally developed by Hodkinson (1972) and although scores were able to signify normal mental functioning or mental impairment (the latter shown by lower scores), the test did not differentiate acute confusional states from dementia which was considered a significant flaw. Subsequently it become evident that the tool was being used neither routinely nor correctly. Consequently a shortened version of the Mental Test Score, the Abbreviated Mental Test Score (AMTS), was developed which has shown a strong relationship with the MTS (Swain, O'Brien, & Nightingale, 2000). Researchers generally use a cut off score of six or below to represent some cognitive impairment with a score of 10 representing normal cognitive functioning (Jitapunkul, Pillary, & Ebrahim, 1991). For the purpose of this investigation, participants with an AMTS of six and below will be classified as having some form of cognitive impairment. The AMTS was to be used as a descriptive variable in this study, and was administered at baseline only. The literature has shown that cognitive state seldom alters during the course of an exercise programme (Emery & Gatz, 1990; Hill, Storandt, & Malley, 1993).

Physical function

Modified Barthel Index: Scores on Activities of Daily Living (ADL) measures are usually based on the degree of independence attained for each function. A participant is asked to rate the level of assistance they require to complete each of the specific tasks by stating whether they could achieve the task independently, with some help, or with complete assistance. For the purpose of the study the Modified Barthel Index Mahoney & Barthel, (1965) was used, and a participant’s performance over the previous week was considered. The Barthel scale covers the following dimensions: feeding, mobility from bed to chair, getting on/off the toilet, climbing up and down
stairs, continence, washing and dressing. Each dimension has five levels of dependency; the maximum score is 100 points representing independence in daily living. The Barthel Index validity is well established (Mahoney & Barthel, 1965). Some challenges have been highlighted in studies investigating the effects of rehabilitation on independence. Self reported levels of assistance can be misleading for participants in residential care; in particular different interpretations of independence is the point of issue. For a number of residents it is the lack of opportunity to be independent, rather than not being able to perform the activity of daily living. For example, in many institutional settings unsupervised showering is not allowed, being ‘against rest home policy’ (Kane & Kane, 1988). Participants may have the ability to shower themselves but rest home policy forbids it.

This has been highlighted by other research Bowling (1995) which found difficulty with self reported and observed assessments, in that they did not necessarily reflect what the person is capable of in relation to performance. Both McDowell and Newell (1987) and Curless and James (1993) have highlighted the ‘floor’ and ‘ceiling’ effect of the scale, in that the index may not be sensitive to improvements or deteriorations beyond the end-points of the scale.

Other studies such as those of Stineman et al. (1993), have reported that for some frail older people it is unrealistic to expect large improvements in function. However, older people who have participated in physical activity interventions in residential care have shown improved independence in selected activities such as walking, getting up from a chair or getting off a bed. After all, mobility is a worthy rehabilitation goal in its own right for very frail older people residing in long term care settings (Fiatarone, 1995; Lebowitz, 2004). Maintaining or improving this ability may provide overall quality of life benefits when the traditional health benefits associated with walking such as longevity, prevention of cardiovascular disease or improved glucose regulation may no longer apply.

Despite these obvious difficulties, the Modified Barthel Index is a well validated tool for measuring functional status and was chosen as an outcome measure potentially sensitive to change as a result of an activity based programme.
The Elderly Mobility Scale (EMS): In contemporary geriatric rehabilitation, including rehabilitation in long term care facilities, the term ‘functional limitations’ is used to represent restrictions in the performance of the person. For example, common functional limitations that might result from a cerebrovascular disease could include limitations in the performance of locomotor tasks such as the person’s gait, and basic mobility (Jette, 1997). Presently there exists no gold standard in measuring mobility because maximum achievable improvements are unknown (Spilg, Martin, & Mitchell, 2001). Furthermore, interpretation of participant scores on clinical tests of physical ability is limited by lack of data describing the range of performance among people without disabilities (Steffen, Hacker, & Mollinger, 2002).

Despite these limitations the Elderly Mobility Scale outcome measure was selected for this study as it had the potential to reflect one of the main outcomes of the study, improved functionality (Smith, 1994). The Elderly Mobility Scale tests the capabilities of lying to standing; sitting to lying; sitting to standing; standing gait; functional reach; and the time to complete a measured walk. The maximum score possible is 20 which represent independent mobility, and the minimum score is 0 which represents total dependency (Smith, 1994).

Locomotion balance and key position changes are prerequisites to more complex activities of daily living (Smith, 1994). The Elderly Mobility Scale was compared to the Modified Barthel Index and Functional Ambulation Category and all three outcome measures detected improvements (Spilg et al., 2001). However, the Elderly Mobility Scale detected mobility improvements in a significantly greater number of older people, and two sub components of the Elderly Mobility Scale, functional reach and gait speed, detected improvements in very frail older people. Research suggests that functional reach and gait speed are predictors of a wide range of physical disabilities in older people (Thomas, Mareen, Banks, & Morley, 2007). The Elderly Mobility Scale was a valid measure of observed function with good inter-rater reliability when administered by trained research nurses (Posser & Canby, 1997).
Timed Up and Go: Studies have shown that gait speed amongst older people is positively correlated with lower body muscle strength in the hip extensors, hip flexors and planter flexors (Skelton, Young, Greig, & Malbut, 1995). A number of tools have been developed to identify people with balance deficits. Many were designed primarily to identify older people at risk of falling. One such tool is the ‘Timed Up and Go’; a modified version of the original Elderly Mobility Scale in that timing is recorded when completing the test (Podsiadlo & Richardson, 1991). The tool is used to measure balance and gait problems based on the objective measure of time taken to complete the task. The Timed up and Go measures the time it takes a person to stand up from a chair, walk a distance of three metres, turn, walk back to the chair, and sit down. It has been found that older adults without balance problems were able to complete the test in less than 10 seconds, whereas a sample of older people dependent in most activities of daily living and mobility skills took more than 30 seconds (Mahoney & Barthel, 1965).

Inter-tester and intra-tester reliability have been reported with variable results. Rockwood et al (2000) reported only moderate retest reliability whilst Steffen (2002) found test-retest reliability to be high in a sample of community dwelling older people who were functionally independent. Construct validity of the Timed up and Go has correlated with outcome measures such as postural sway, Barthel Index, step frequency and gait speed (Mathias & Nayak, 1986; Podsiadlo & Richardson, 1991). Surprisingly, there is little consensus in the literature regarding the effect of ageing on Timed Up and Go scores (Medley & Thompson, 1997; Rockwood, Awałt, Carver, 2000; Thompson & Medley, 1998). Timed up and Go has been used frequently in studies and was used as a measure of observed physical function in this trial.

Two Item Fear of Falling: The two item Fear of Falling question involves asking each participant two questions related to fear of falling. Firstly are they afraid of falling, and secondly, have they stopped any activities because of this fear. Activities stopped were not prompted but recorded if volunteered by the participant. Several studies have investigated fear of falling expressed qualitatively by asking ‘are you afraid of falling’ (Maki, Holliday, & Topper, 1991; Walker & Howland, 1991). In such studies, when these questions have been compared to physical function tests such as
Force Platform Balance tests, participants demonstrated significantly worse fear while standing on the platform (Hu & Woollacott, 1996). Other studies have reported little difference between demonstrated fear of falling and expressed fear of falling. (Tinetti, Richman, & Powell, 1990) This suggests that the overall effect of fear of falling is more than a dichotomous variable, varying significantly from not at all fearful to extremely high levels of fear for individuals (Hill, Schwarz & Kalegeropoulos, 1996). The outcome variables for the trial were repeated at 3 and 6 months by an independent research nurse blinded to the group allocation of participants.

**Quality of life**

**Life Satisfaction Index Z:** One tool that has undergone extensive testing for reliability and validity in samples of older people, and is widely used to measure well being in gerontological research, is the Life Satisfaction Index Z (Neugarten, Havighurst, & Tobin, 1961). Life satisfaction is the overall assessment of one’s life or a comparison reflecting some discrepancy between one’s aspirations and achievement. The rationale for developing the Life Satisfaction Index was to measure life satisfaction in a way ‘relatively independent of level of activity or social participation’ (Neugarten et al., 1961). This is entirely appropriate for the study, when generally these groups of older people have limitations in levels of activity as well as reduced social functioning. The tool was further refined by Wood et al. (1969) when the index was reduced to thirteen items with a revised scoring system to give two points for affirmative response and one point for uncertain responses, instead of the dichotomous scoring of the original scale.

**SF-36:** The Medical Outcomes Study SF-36 (Short Form 36) was developed to assess self perceived health in a variety of settings (Ware, 1993). The SF-36 has been used in both general and specific populations, comparing the relative burden of diseases, and in differentiating the health benefits produced by a wide range of treatments and interventions. Its performance has generally rated highly (McHorney, Ware, & Raczek, 1993). For our study population, who has generally been under-researched, this tool was chosen primarily because of its multiple domains that may be sensitive
to change over time. Measuring the impact of physical activity on general health offers significant challenges and continuing debate (King et al., 1992).

Interest in the suitability of the SF-36 for the elderly population has been explored in several studies (Lyons, Perry, & Littlepage, 1994; Parker, Peet, Jagger, Farhan, & Castleden, 1998). Evidence from those studies has suggested that internal consistency was good and construct validity was also good, in that it was able to distinguish between those older people with and without markers of poorer health. However, self administration of the tool was not recommended due to lower levels of data completeness for reasons such as too tired, visual difficulties, loss of concentration, and the inability to hold a pen. In these circumstances recommendations are that the SF-36 be conducted using an interview setting (Lyons et al., 1994; Parker et al., 1998; Scott, Tobias, & Sarfati, 1999).

The reliability of the eight scale and two summary measures has been established using both internal consistency and test-retest methods. The lack of cross cultural validity has been reported by Scott (1999) and also cautions against its use in samples of Pacific people and older Maori (45 years and over) as it did not clearly differentiate physical and mental health components in those groups. Further limitations have been reported relating to the validity of the SF-36 in samples of nursing home residents. Face validity appears to be the major limitation with a number of items not generally performed in this setting (Andresen, Gravitt, M., & Podgorski, 1999). This lower face validity might affect the retest reliability because of uncertainty about the meaning and relevance of some questions.

The ceiling effect for the SF36 has been suggested to be between 37-72% (Brazier et al., 1992). However, in a study of non institutionalized elderly men and women with osteoarthritis of the knee (a common condition for older people in residential settings) it was found that the responses of ‘no problems’ to ‘confined to bed with some problems’ covered an enormous range from those who are independent to those requiring maximum assistance of caregivers. Reduced face validity was applicable to the participants in this study, a higher functioning group of older people, residing in facilities that provide board and lodgings with minimal nursing
care needs. These older people still participate in community activities such as shopping and visiting friends and family. Therefore the outcome measure was considered appropriate.

**EuroQoL-5D:** The main driving force of the EuroQol-5 (R Brooks, Rabin, & de Charro, 2001) is that the approach is considered generic, rather than aimed at one particular disease or treatment. Its design endeavors to capture physical, mental and social functioning (Brooks, Rabin, & de Charro, 2001). Currently the EuroQol Group advises that the EuroQol be used alongside an alternative quality of life measure such as the SF-36. The designers of the tool specifically question whether the EuroQol-5 can be used as a stand alone outcome measure or “is intended to complement other forms of quality of life measures” (Brazier et al., 1992). The debate continues.

The EuroQol-5 assesses outcome in six broad areas: mobility, self-care, activities, pain, psychological functioning, and self-reported overall health related quality of life. The measure comprises of two parts, with the first five questions (EQ-5D) covering dimensions of mobility, self care, usual activities, pain/discomfort and anxiety/depression, each of which have three levels of response. The self report time frame is given as ‘your own health state today’. The second part (EQ-VAS) consists of a 20cm vertical visual analogue scale (VAS) which gives a self assessed measure of overall health state. The visual analogue scale ranges from 100 (best imaginable health state) to 0 (worst imaginable health state). This analogue scale does not express any longevity trade-offs. Van Agt, Essink-Bot, Krabbe and Bonsel (1994) investigated the reliability of the tool and found that test-retest reliability was acceptable. Test–retest reliability both at individual and group level showed the Inter rater reliability 0.98 and 0.99 respectively for the Visual Analogue scale (Brooks, Rabin, & deCharro, 1996).

Many of the domains of the SF-36 appear to relate closely to the questions in the EuroQol-5, however the relationship between responses by an individual to the domains of each instrument have not been well defined (Dorman, Dennis, & Sandercock, 1999; Group., 1990). Brazier et al. (1992) explored the validity of the EuroQol-5 compared with the SF36 in a randomly selected general population and
found there was good evidence for the construct validity of the EuroQoL-5. However, there are some discrepancies. Within the EuroQoL-5 measure there was a large ceiling effect with over 93% at the ceiling for the functional dimension. It has been suggested this is primarily related to the fewer items within the EuroQoL-5 measure.

The gold standard for health related quality of life measures should at least include physical, psychological and social health, as well as global perceptions of health and well-being (Frytak, 2000). This study has included both the SF-36 and the EuroQoL-5 as health related quality of life measures so that all of these perspectives are measured.

Table 4-9: Order of baseline assessment and three month and six month follow ups

<table>
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<tr>
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<th>Baseline</th>
<th>3-Months</th>
<th>6-Months</th>
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<tbody>
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<td></td>
</tr>
<tr>
<td>Gender</td>
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<tr>
<td>Ethnicity</td>
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<tr>
<td>Support Needs Level</td>
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<tr>
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</tr>
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<td>Medications</td>
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<td></td>
</tr>
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<tr>
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<td>✓</td>
<td>✓</td>
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Research tool utility
Reliability indicates the extent to which a test scales or instrument gives consistent results when applied by different people or on different occasions. Validity indicates
the extent to which the test scale or instrument measures what it is designed to measure. Reliability and validity of instruments continues to be a substantial problem when used to collect data from frail older people. Most instruments have been developed and standardized for younger age groups. Some that have been validated for the older person have been on 'young-old' not the ‘old-old’. (Bowling, 1988; Fiatarone-Singh & Mayer, 2002).

Predictably, the most commonly reported reasons for unsuccessful use of available instruments with older people include low energy or high fatigue levels, inability to understand what is expected because of reduced cognitive abilities, sensory deficits and treatment conditions which are often confounded by impaired functional capacity or by between-group contamination (Bowling, 1988; Gueldner & Hanner, 1989; Nesselroade, 1989; Phillips, 1992).

In real life terms, any impact of an intervention may be fraught because of the variance in the daily functional ability of the subjects. One of the construct validity issues for institutionalised older people identified in studies is simply that subjects have no frame of reference within which to interpret or to respond to some of the questions (Phillips, 1992). Using an inappropriate instrument to answer a research question may result in loss of generalisability, increased cost and lack of validity (Bowling, 1988; Morse & Field, 1995). Recognising the limitations in reliability and validity of outcome measures for frail older people, one goal of PILS was to examine the most appropriate outcome measures that will better inform future research projects.

**Statistical analysis:** Outcome analyses were conducted on an ‘intention to treat’ basis in which all randomised residents were included in the analysis, regardless of their compliance to the study. Drops outs were defined as residents who refused to provide any data at a follow up visit. Descriptive statistics and summary statistics were produced using SPSS release 12.

**Baseline characteristics:** All baseline information was summarised using means and standard deviation. These were calculated for each treatment group and for the
overall results. Information on demographic characteristics, medical history and medications were summarized. Adherence to the exercise programme was summarised using descriptive statistics. Adherence was defined as the number of exercise sessions completed out of the total prescribed sessions.

**Treatment effect:** The main analysis to evaluate the treatment effect of the intervention used repeated measures analysis to investigate the change in SF-36 scores over the six months. Specific hypotheses tested using contrasts were the change between baseline and three months and the change between baseline and 6 months. Linear mixed models with time as a repeated measure and an autoregressive correlation structure were used. Age, gender, Barthel Index and Mental Test Score were included in the models. Rest home was included as a factor to adjust for clustering.

### 4.4.2 Qualitative data collection

**Semi structured interviews**

All interviews were conducted face to face and two interviewers were involved. The first interviewer was an independent facilitator, employed to conduct the interviews with the nurse managers from the five rest homes enrolled in the study. It was envisaged that employing an independent interviewer would allow nurse managers to speak freely and without prejudice, as the principal researcher had worked closely with each of the nurse managers during the implementation of the intervention. Roberts (2001) highlights that strategies need to be taken into account when conducting this type of interviewing, particularly when one of the researchers is intimately involved with the implementation of the programme. Individual invitations were sent to nurse managers to seek consent to participate in a semi-structured interview to explore their perspectives.

The second interviewer was the principal researcher. At the completion of the six month follow up assessments, staff including registered nurses and caregivers, and residents who had participated in the intervention was invited to take part in a semi-structured interview. Additional informed consent was obtained from all staff and residents prior to taking part in Phase 2. Interviews were held at a mutually agreed
time and place. For the residents this tended to be in their own room. Interviews with staff were generally during a tea break or at the end of their shift; the timing of the interview was directed by the consenting staff. In order to capture the exact words of participants taping of interviews was a preferred option, therefore permission to record the interview was sought.

An interview schedule comprising open ended questions was developed by the researcher as a guide in order to allow for conversation and points of view to be explored by the interviewee. The use of an interview guide guarantees that the same topic and questions are pursued with each participant, while at the same time giving the flexibility to explore issues that arise. This ensures that the limited time available in an interview situation is used economically, whilst still allowing topics important to individual participants to emerge (Patton, 1990; Polit & Hungler, 1999). An independent critique of the interview schedule assured all issues were covered. The interview guide comprised three parts (see Appendix 8):

- Introductory questions to set the scene;
- Key concepts representing the research interests; and
- A set of generic prompts (such as ‘how’, ‘tell me more’ and ‘what did that mean to you?’).

Each staff group and residents had separate interview guides providing appropriate information relevant to the role they played in the intervention. The researcher sought to establish the factors contributing to the success of the intervention, as well as exploring the impact of the intervention on residents’ health and well being. Staff perspectives were also sought regarding factors that contributed to the overall impact of the intervention on the residents and the work environment. Questions were directed toward initiating responses from the participant and using these responses to tease out or explore areas of interest to the researcher and the participant (McIntyre, 2005). The interviewing process provided flexibility, allowing for ebb and flow as participants recounted experiences and interjected with thoughts throughout the interview. There was an absolute commitment to building on the participants’ own words, and to use these during the interview to explore new ideas that arose. Taylor and Bogdan (1984) describe the role of the researcher as being a “research tool”
themselves, by not only asking the questions but also by knowing which answers to explore further and how to ask these questions.

When the participants as practitioners (either delivering the intervention or participating in the intervention) start talking about their day-to-day work and the experiences that contributed to the pattern of work practice, this provides rich data (Chew-Graham, May, & Perry, 2002). Patton suggests that the quality of information obtained during an interview is dependent not only on the interviewer having a genuine interest in learning about the human experience, but also having the skills and technique to elicit the information from participants (Patton, 1990). All interviews were carried out by the same researcher and lasted approximately forty to sixty minutes. Taylor and Bogdan (1984) conclude that the goal of data collection is complete when additional interviews yield no genuinely new insights.

**Data management:** In order to ensure the richness of the data was captured, all interviews were transcribed verbatim and entered on a Microsoft Word document (Microsoft Word, 2003). Transcripts were compared with the tapes for accuracy.

**Analysis:** A general inductive approach was used which allowed the themes and categories to emerge from the data being analysed (Thomas, 2006). There are a number of steps undertaken to achieve the desired outcome. In qualitative data analysis, these steps form part of the analysis and are formed depending on the specific approach. Thomas (2006) states that there are analysis processes that are generic in their procedures and offer the researcher a non-technical set of data analysis procedures from which to work. The discipline and rigor of qualitative analysis depends on presenting solid descriptive data. This has been referred by Denzin and Lincoln (2000) as ‘thick description’. An important outcome of the data analysis is to present the data in such a way that others who may read the results can understand them and draw their own conclusions (Patton, 1990). The application of the general inductive approach to this trial is set out in detail below.

**Field notes:** Throughout the period of the study, field notes were written to provide a present-time record of important points or facts that should not be missed during the writing up of the study. These notes included comments concerning
methodology, analysis, and discussion points that were made. Comments were also made about the limitations of the study generally and the implementation of the PILS intervention. Patton (1990) suggests that field notes are not just a simple recording mechanism; insights, ideas, inspirations and judgments, too, will occur while making observations. In keeping field notes it allows ideas about the meaning, causes, and significance of what we experience to find their way into our minds. Yin (1989) discusses field notes as the fundamental database of qualitative research. Contextually the field notes offered the researcher an objective record about the experiences of the residents and staff enrolled in the study and the environment in which it was part (Morse & Field, 1995). These notes formed the preliminary analysis that uncovered key concepts in Chapter 5 that describes the roles and realities of residents and staff living and working in residential care.

**Preliminary analysis:** The goal of the preliminary analysis was to uncover key concepts arising from each interview. This involved reading the transcripts in their entirety several times to identify emerging themes and categories. The transcripts were then classified into four groups defined as residents, caregivers, registered nurses and nurse managers, so that similarities and differences could be explored by identifying the perspectives of each group initially. Each transcript was then cut and pasted under the broad headings that had emerged during the course of early reading. This allowed for consistency when dealing with the large volume of material at this early stage. Once all the interviews had been processed in this way, further coding of the text was undertaken.

**Inductive coding:** The researcher’s method was to not exclude any material at this stage; and that for each line of text, up to three codes were acceptable, as supported by (Davidson & Tolich, 1999, p. 26):

*When you are trying to determine what someone’s behaviour ‘means’ the mental exercise involves connecting a discrete fact with other discrete facts.*

These codes and their locations were then transferred onto a card file. The researcher recognised that the coding needed to be completed in an unhurried fashion, as coding done all at once could have become sloppy or partial, and would have been reflected in the quality of the analysis (Davidson & Tolich, 1999; Stake, 1994). At the
completion of the coding process, an asterisk was marked on the transcript that “best illustrated” a particular issue. This was a useful summary step at both the analytical and the writing stage. To protect the confidentiality of both residents and staff that consented to be interviewed, a pseudonym was attached to each interviewee script.

**Data synthesis and interpretation:** Throughout the course of the research a parallel and interwoven analysis was taking place. This was not systematic nor did it involve simple coding and categorising techniques, but related to meaning and insights that developed as the study progressed (Huberman & Miles, 1994; Leibrich, 1993; Lofland & Lofland, 1984; Thomas, 2006).

This process continued until a tentative pattern of relationships was identified, which then stimulated a further inductive cycle. According to Strauss and Corbin (1990) a researcher has succeeded in devising a category when she can identify its properties, knows its boundaries and can give it a name. The categories were analyzed and grouped into areas of commonality which formed the major themes for reporting the findings of the study. During continuing revision and refinement of the category system, sub-categories emerged that included contradictory points of view and new insights (Thomas, 2003). In total 26 categories emerged from staff responses to the open ended questions. Subsequently a number of these lower level categories were combined. For example, four of the different categories related to components of time, not having enough time, the tyranny of time, and making up time. However it was difficult to fit some of the text units describing time in one of these categories. The appeared to be a blurring between them and by merging the three categories a more meaningful category emerged.

This analytical process can be compared to Leibrich who describes this time as about “being,” not “doing”, saying “it was a time of stillness” (Leibrich, 1993, p. 284). It was during this stillness stage that the researcher had the time to make connections. As Huberman & Miles suggest, ‘prior events are assumed to have some connection with following events, even though that connection may not be neat or clear’ (Huberman & Miles, 1994, p. 54)
By interpreting the data, the researcher’s understanding is changed and expanded, which thereby forms a new continued interpretation. Achieving productive interpretations occurred by both thinking and listening, and critically analysing and internalizing the data. The researcher was able to relate the structure of the data to its meaning and context. The findings from the inductive analysis of the semi-structured interviews are described in Chapter 5 “Roles and Realities and Chapter 7 and 8 in the form of detailed descriptions and quotations to illustrate the meanings of the categories developed.

**Trustworthiness:** Reliability and validity were addressed by a number of procedures suggested by Lincoln and Guba (1989) and Thomas (2006). These authors identified a number of steps that may be required when assessing the trustworthiness of data, including credibility, transferability and dependability. In the case of this study, the following steps were undertaken by the principal researcher to ensure trustworthiness. Credibility was sought in two ways. Firstly transcripts were independently reviewed and coded by two independent researchers to ensure coding development was consistent and transparent. Secondly, discussions with participants including staff and residents and key stakeholders followed the first level analysis to enhance the credibility of findings, by allowing participants to comment on whether the constructions of the researcher related to their personal experience.

Credibility is comparable to internal validity and addresses the issue of fit between the participants’ views and the researchers’ interpretation of them. Patton (1990) suggests this form of triangulation, whereby the researcher learns about the accuracy, fairness, and validity of their data analysis by having the people described in that analysis (participants) react to what has been described. The strength of qualitative research lies in its validity and although the results may not be common across locations because of factors such as type of rest home and ownership of rest home, the results reflect the experiences or actions of the staff and residents participating in the intervention (Tolich & Davidson, 1999). This is commonly termed transferability.

Transferability (comparable with external validity) refers to the generalisability of inquiry. In this study the data was collected from staff and residents who were
involved in the intervention. When the researcher arrived at the point where repetition of the salient points was reached, saturation had been achieved (Green & Thorogood, 2004; Guba & Lincoln, 1989).

Dependability (comparable with reliability) requires the researcher to be responsible for ensuring that the process of research is logical, traceable and clearly documented. The researcher in this study ensured that notes about raw data, field notes, formulated meanings, notes on analysis and interpretations and insights were carefully documented and stored safely.

4.5 Conclusion

This chapter described in detail the quantitative and qualitative research techniques used to measure the effectiveness of a physical activity intervention designed to improve function and quality of life for residents in residential care, and to establish the perspectives of those participating in the intervention. The relevance of selected outcome measures has been explored and the rationale for undertaking a general inductive approach with the rich data provided from the in-depth open ended interviews was discussed. Having described in detail the mixed methods design of the study, the results are reported and discussed in following chapters.
Chapter 5: Living and working in residential care; roles and realities

5.1 Introduction

The purpose of this chapter is to set the scene by exploring, describing and interpreting rest home residents’ and staff’s perceptions of their personal experiences of rest home life. It lays down patterns of ‘mosaics’ that make the experience of rest home living more comprehensible. It uncovers the residents’ and staff’s ‘framework of meanings’, all important issues that will make sense of results reported in subsequent chapters.

The results of this chapter were generated while interviewing participating residents and staff. The semi structured questions at the commencement of the interview were a way of relaxing into the interview process. The information shared provided insightful imperatives that the researcher considered rich data during preliminary analysis and has used to develop a chapter exploring the institutional environments in which this study was conducted.

In models of total institutions, Goffman (1961) stresses the negative consequences of institutional rules and procedures for inmates and staff. In his participatory observation study of mental institutions he explored the fundamental processes that govern such places (Goffman, 1961). Similar conclusions can be drawn from the way rest homes enrolled in this study operate. The processes that govern these rest homes emphasise regimented routines that restrict the way caregivers can work. These limitations have been described in other nursing home studies, particularly the bureaucratic routines that compromise residents’ autonomy, dictating even their most basic activities, such as when to get up, when to go to bed, when and where meals are to be serve (Bowers et al., 2001; Diamond, 1992; Foner, 1994) And yet the evidence suggests that generally caregivers come to this work through the love of older people (Chou, Boldy, & Lee, 2002; Nolan & Grant, 1993).
Chapter 5: Findings, roles and realities

The way in which older people become residents provides a framework for exploring the ways in which they evolve from being an independent older person to one who is a resident in an institution.

5.2 Residents’ perspectives

5.2.1 Who they were

The older people were individuals whose lives have been shaped by their personalities, histories, and lifestyles. These older people were also the survivors of several wars and a depression. The participants all talked about leading lives that included working, being parents, grandparents and great-grandparents and participating in social and community activities. Harry states:

Yes throughout my life I have been involved with a number of organisations for instance the RSA. I became president, I was in Rotary and became the president, and I have been involved with freemasonry for 60 years (Harry, 80, RH4).

I used to look after my grandchild every Thursday it was a special time for us both, I think she (the grandchild) misses that now that I am in here (Mary, 85, RH2).

Some had spent a life time of self employment, while others such as Roa worked for the public service:

I was very active in my younger days. I had to be as I was a policewoman. My husband was also in the police force. We didn’t have any children but I didn’t mind that (Roa, 81, RH5).

More commonly in the case of women, however, raising children and being a housewife was cited as their main occupation. Several participants said that they had several careers during their working life, illustrated by a male participant:

Yes well my desire during the war was to work outside and I went poultry farming for 25 years and that became uneconomical. It came to the stage where I think we needed to get out and about that time I decided to buy the shoe shop and make the change so that puts paid to that question. I think I have achieved what I planned (Harry, 80, RH1).

The residents described themselves as successfully ‘aging in place’ in their own homes until ill health or a chronic disability prevented them from completing either their activities of daily living such as showering and dressing, or their instrumental
activities of daily living, such as the ability to prepare a meal or do the gardening. As one older person told her story:

> I tried so dammed hard to stay at home but in the end even with all the supports offered it was just too much of a struggle. I hated giving in. I felt such a failure at the time (Mary, 80, RH2).

### 5.2.2 What brought them in?

Risk factors for entry into residential care have been examined extensively; published studies describe worsening daily living status, living and family arrangements, increasing age, and cognitive impairment as main risk factors (Weatherall et al., 2004).

‘Falling over, not being able to get up from a kneeling position’ was cited by several older people in this study as the reason for admission. Ongoing health problems were cited as another common reason for rest home placement:

> Well I had a heart attack and Matron moved me into this room; anyhow they told me after coming in the third time that would be it (Lara, 85, RH3).

Diminished psychosocial reserves have also been highlighted as a reason for increased institutionalisation (Baltes & Mayer, 1999). One resident explained that despite living with her family this just wasn’t enough when her mobility began to deteriorate and she began falling:

> I came up this way to live with my daughter. She worked all day and I was fine until I started falling and broke some ribs and went to hospital. They had a family discussion and felt I couldn’t be left on my own. I was afraid that I might fall again (Betty, 88, RH5).

The loss of a person’s own home by moving into a rest home permanently can create a barrier for older people in societal terms, as well as possibly being a source of stigma to one’s own peers. There was some attention to the fact that there was a chance of the friends also ‘ending up’ in such a place:

> When I mentioned to my friends that I was going to have to come into this rest home they were horrified and said there is no way they were going to come into a place like that ….you just sit around and do nothing all day. I remember it made me feel really bad at the time (Ivy, 85, RH3).

On a number of occasions Ivy’s comments were echoed by other residents stating that, combined with this sense of stigma, to enter a rest home was a fate worse than death. This notion is reinforced within an anthropological perspective that describes
rest home placement as a ‘double burial’ in a cultural context, suggesting that entering a residential care facility represents the ‘first death’ of being cut off from society, with the second being one’s natural death (Shield & Aronson, 2003). Understanding where this dread arises provides insight into the way older people transition into being a resident.

To admit to one’s own mortality with the recognition and partial acknowledgement that one’s physical body (considered one’s ‘castle’) is simply no longer able to do what it used to do is in a sense ‘giving in’ (by entering residential care). One interpretation is that it might just simply mean an admission of one’s own mortality. For others it might mean trying to balance domestic standards with medical mastery as described by Ena:

> I have got arthritis in my arms, I couldn’t get my arms up and then I could still get the washing out of the washing machine so that was all right but I just couldn’t do those other things like hang it on the line. And I just couldn’t do the house work and don’t think I want to be in a rest home, because I don’t (Ena, 90, RH5).

### 5.2.3 Transitioning to being a resident

In these circumstances, there was real potential for a sense of self and identity to be devalued by the institutional construct. This was something we wanted to counteract in our intervention, to give the older person the chance to set goals that were meaningful to them. It is not surprising that people who are forced to see themselves as old, dependent and residents of long term care facilities have a devalued sense of self. The feeling of leaving home and entering a rest home, along with the loss of identity associated with losing ‘identity props’ such as home, family and possessions were to some extent the transitioning mechanism to becoming a resident.

**Negotiating across social and medical milieu**

How the older person progresses towards being a resident is described below. Residents are in a ‘place’ that moves frequently between a social model of care and a medical model of care. The older person may begin to view the rest home as a place to rest and a place to be taken care of. Two residents’ comments exemplify this opinion:
A good experience, yes. We are well looked after, you know how they makes us comfortable, and happy, and do most things that we need doing like showering and dressing us (Joan, 79, RH5).

It was hard at the start, but oh I have come to realise and eventually accept that I am one of the residents and I like being looked after (Grace, 95, RH3).

That is, the facility is constructed as a care setting, not a home, so the emphasis is on accessibility, and ability to deliver care, rather than as a comfortable enjoyable environment with space for participation and activity. Living in confined spaces was a constant reminder to the residents that their current position was a ‘work in progress’ towards becoming a resident.

Yes it did seem hard initially but I have been six years now well, it’s a lot for any one to come in here, to find themselves living in a confined space, but I have had to get used to it really, I found for example, it difficult to be showered, I found it more difficult to be supervised and helped, but I had to give into it (Harry, 80, RH5).

Conversely other residents talked about how they worked hard at being independent. For example Roa in Rest Home five described how she went about this:

I have all my memorabilia around me in my room, from my room I have access to the garden, I have planted a lot of vegetables in the garden and eat these on the weekends when I cook myself breakfast. I work around the home to maintain my independence (Roa, 81, RH5).

Looking forward: looking backwards

For the duration of the transitioning period residents described how they would look back on their past wondering if they had made the right decision to become institutionalised:

I think it would be nice to be somewhere else but then I think no I am so happy here and well looked after, and I think it would be really hard for me to go back and I would get very lonely (Molly, 85, RH1).

Mavis also questions whether it was the right decision to come into the rest home:

Well when I was at home I was a busy person and then I was living with my daughter before I came in here. I managed to do all the baking at her place, the kids used to love it. I miss that and sometimes wonder if I made the right decision (Mavis, 92, RH4).

In contrast Roa described how the medical care she was receiving may facilitate her ability to be both physically and socially active:

If I can bend down better with this certain medication, I will be able to get back to gardening, I have a small plot outside my window (Roa, 81, RH5).
At an individual level, residents during this phase appeared to begin to formulate questions such as:

*How will I manage this? Who or what will I need to help me?* (Ena, 82, RH1).

The experiences that the residents expressed in this study are also depicted in classic nursing home studies including Diamond (1992), Shield and Aronson (2003), and Savinshinsky (1991). In these studies, new residents were seen to engage in an unsettled life even when they stood still. They got up in the morning and moved through the day, often with the strength of determined survivors that probably was characterized by their earlier lives. This is reflected in several residents’ comments in the current study, captured by Mary who wanted to enroll in the PILS programme:

*Because I was worried that I wasn’t getting enough exercise and I felt weak and dependent on the carers. I don’t want to be demanding as you can make yourself unpopular and I didn’t want that to happen* (Mary, 80 RH2).

In contrast to this, Diamond (1992) proposes that life in residential care is not what it seems. To an outsider it may appear static or be viewed as a passive existence when in fact some residents are living in a social and supportive environment. Reflecting this, residents in the current study articulated interests that they actively pursued both within and outside the facility:

*Well I watch all the cooking programmes on TV, I would like to get my hands in that like I used to at home. You see I used to do all the baking for my children* (Mavis, 92, RH5).

*I also play bridge once a fortnight (I have played most of my life). Eight of us belong to the Papatoetoe group. We go there. We buy toastie sandwiches for lunch and have two tables going. I look forward to that* (Lucy, 86, RH 2).

### Fitting into the daily routines by adapting

Conforming to daily routines, relying on other residents and staff, going to the dining room for meals and attending group social activities all provide fresh reminders to the newly admitted residents that they live and breathe under the rest home’s rules, regulations and routines. As Mavis discovered soon after she was admitted:

*Well you couldn’t always ring the bell as you couldn’t reach it, then you had to call some one to take you down in the wheelchair, it was just terrible* (Mavis, 92, RH5).
Roa had difficulties around meal time structure:

*You had no choice in the time you ate or where you ate your meals. They insisted you go down to the dining room for all your meals (Roa, 81, RH5).*

Without exception, residents spoke of the necessity of making the best out of moving into a rest home saying

*You have to make the best of a bad lot!*

and describing

*putting on a brave front!*

This implies that the best way to cope was to get on with it and focus on how to make life as pleasant as possible under the perceived ‘burden’ of institutionalisation. Resilience and hardiness are terms often used to describe the way in which older people cope or do not cope with life situations. By residents utilising the ability to construct a positive story of coping, they may in fact, as suggested by Goffman (1961), be constructing a buffer against the challenges of institutionalisation.

Residents who feel they had some control over the decision to enter a rest home tend to do better and live longer (Jorgenson, Arksey, Parson, Senior, & Thomas, 2009). This positive way of adjusting is reflected by one resident in her early 90s who had been living in the rest home for the last 6 years:

*Yes I was a lot fitter back then when I first came in – used to do my own shopping and cooking. My daughter wanted to build the granny flat on the back of their section but I said no I want to live by myself, so I moved in here (Phil, 90, RH1).*

Four phases of adjustment following relocation to a rest home have been identified in a study exploring the ways residents adjust following entry to residential care (Brooke, 1989). The first phase is characterised by residents feeling displaced and abandoned. During the following three months relocated residents began to reorganise by trying to find new meanings in life. One way in which they did this involved relationship building with both staff and other residents. The final phase of adaption to rest home life was shown as having a stabilising effect on residents, often described as the resident being ‘more settled’. Generally studies have shown that all four phases occurred within the first six months (Brooke, 1989).
These stages were demonstrated by the residents enrolled in this study, in that by the time of this study they generally felt more settled and had formed friendships with caregivers and other residents living in their wing of the home. Most agreed that it had taken some considerable time to adapt but felt a sense of peace after the first five to six months.

5.2.4 Being a resident

Whatever trajectory an older person was taking in transitioning to being a resident, at some point the older people in this study felt they had adjusted to life in residential care, to varying degrees. Residents, however, did not define themselves solely as institutionalised individuals; many struggled to maintain their personhood within this setting. Their identities may well be fragile and unsure in some cases, but in a determined way residents were able to maintain a sense of self. For some it involved attempting to find joy and happiness with their new life, for others it was having a telephone in their room which they used to communicate with friends and family on a daily basis, and for others it was merely having memorabilia that reminded them of their past life:

> You have got to be happy; whether you want to be happy or not you have got to make the best of a bad bargain (Ena, 82, RH1).

Acceptance of being a resident has been explored by Kahn (1990), who identified passive acceptance or simply conforming behaviour to the norms and routines of institutional life. Residents may recognise the institution’s external authority without actively embracing it (Diamond, 1992; Kahn, 1999; Savishinsky, 1991).

Daily routine of a resident

It was evident that the daily routine described in practical terms was central to the way the residents viewed their quality of life as a resident. This focus on the daily routine was expressed in terms of getting out of bed, getting washed and dressed or walking to the dining room for meals. Residents felt the need to comply with the rules and to ‘fit’ themselves around the routines of the rest home they perceived to be dominated by overworked care staff. This led to residents being denied a morning lie-in, a choice in showering time, or walking outside alone:
I tell you straight, by night time, especially today because I have had a shower and that just about kills me and they make you clean and I don’t want to be clean anymore and then I go up to tea I don’t always want to go up to tea (Ivy, 85, RH1).

I want to be left alone but I need to be looked after. But I don’t like it mind you having to get up when they tell me (Phil, 90, RH1).

Meanings of independence
Interpretation of the meaning of ‘independence’ from the resident’s perspective was sought during the qualitative phase of the study and emerged as a theme. The understanding of independence from the resident’s perspective may in fact have a whole different meaning and context than that understood by researchers and staff. Elsie summarises the general comments that residents provided when asked to explain what independence has meant since residing in the rest home:

Well, not to have to rely on people to help me all the time. I feel I still have my independence when I can still do little things for myself (Elsie, 89, RH5).

Do the little things account for more, implying that it is not entirely necessary to be totally self sufficient to feel independent? A recent study succinctly reported that ‘there is more to life than putting on your own pants’ (Radomski, 1995, p. 287).

Valuing independence can be perceived in a variety of ways to maintain quality of life. Furthermore, residents in this study felt that independence in the rest home environment was more about being in control than actually doing everything themselves:

You feel some kind of control when you can do bits of yourself. I can’t do up my bra or brush my hair because of my bung shoulder but I can still shower myself and dress myself once my bra is on. I would hate not being able to do (Elsie, 89, RH5).

Control takes many forms
Residents came to rest home life with a repertoire of well-developed behavioural, cognitive and emotional strategies that they had developed over their life. These strategies were evident when the residents in this study described how they perceived and went about controlling their environment. For some it was influencing how the caregivers and nurses interacted with them:

Yes I hate being dependent because some of the nurses we have had here have been terrible, so I wouldn’t ask them for help. It made me try and do
things by myself so I felt I could then control things better this way. It’s not so bad these days really (Alice, 85, RH1).

For others being in control was not specific:

Well, yes I think everything is made in rest homes to keep us comfortable; we are still living so you feel slightly in control (Molly, 85, RH1).

Still others saw control as having the support of equipment:

Oh I had to give that up quite a while ago I couldn’t get up from down but I now have this pulley thing that lets me pull myself up without calling for help all the time (Edna, 82, RH3).

Clearly from the residents’ points of view, the notion of control can be interpreted as self-preservation, a concept that has been identified as a key to survival into old age regardless of location (Tobin, 1999).

Nay (1993) found in her study of women living in residential care that the important facilitators of coping were a sense of control, a supportive environment and reciprocal social relationships. Other studies exploring coping strategies identified being a non-worrier, having a sense of humour, having someone to listen, and living one day at a time as positive coping skills (Boyle, 2004). Residents in the current study echo these findings:

Well actually I have fewer problems now living here compared to some of the others as I have good chats with my caregivers every day (Harry, 80, RH5).

This can be interpreted as maintaining at least some continued sense of control. Edna commented:

Perhaps you could say we are organised rather than pushed around

For Betty maintaining her independence was a way of retaining control:

No I don’t have to rely so much on the staff. Really they are always short of staff and I suppose I am one of the more independent [residents] and I don’t want to bother them when there are others needier than me that need help (Betty, 88, RH5).

Controlling food

Controlling food was a hot topic and emerged as a key category. Thematic analysis revealed that when the residents talked about food it was always in the context of a
lack of control. Residents who ‘complained’ were articulating in a pragmatic manner their lack of control over and choice about when and where they had their meals:

*Well I would like to get up in the middle the night and have a feed of ice cream but I can’t as I am not allowed* (Bella, 80, RH3).

*Being able to help myself to whatever I want to eat and when I want to eat, it would be nice* (Mary, 85, RH2).

In order to gain control some of the residents attempted to find solutions that allowed them more choice. Some found solutions to this situation by purchasing food. By having access to food, the residents felt enabled to act as hostess when family or friends came to visit:

*I love it now when the grandchildren come, and they look in the fridge for a cold drink or Nana’s yogurt* (Mavis, 92, RH5).

Results from the current study support other findings that food has symbolic meaning, for example, the gifting of food was a source of great satisfaction for residents (Sidenvall, Nydahl, & Fjellstrom, 2000).

For the fitter residents the time between meals was perceived to be very long and these residents were frequently hungry. This had been resolved by some residents in this study having purchased a small fridge, which provided some control of in-between snacks as well as not always having to go down to the dining room for meals. Shield observed in her study that many residents felt keenly ‘the loss of their refrigerator’ (Shield & Aronson, 2003, p. 134).

Making meals more appetising was felt intensely by residents who described that despite being hungry they often lost their appetite during meal times. Observing people’s reaction to hunger, a rest home study distinguished between food intake motivated by nutritional need, and food intake prompted by a desire for certain sensations of pleasure and delight. Residents in this study described how food intake was primarily related to the need to eat, rather than to the enjoyment of eating:

*Oh yes, I eat what I can, I don’t like [the] food, it’s the way it’s cooked and presented, I often leave the table feeling hungry* (Mary, 80, RH2).

*The food is so boring now; the menu is the same week after week. We have no choice* (Roa, 81, RH5).
For other residents, attending cooking classes held in communal lounges, or watching cooking shows on TV, provided them with enjoyment and reminded them of baking smells or recipes they had prepared while living in their own home. These events reminded the residents of pleasant feelings associated with ‘home’. Residents in this study often explained that to maintain one’s selfhood it was very necessary to be involved in some meaningful activity that had personal meaning and control.

Several of the more disabled residents expressed the loss of control as they lost their independence. This is supported by adult dependency literature that suggests that it is lack of control that underlies much of the shame that is attached to adult dependency (Baltes & Mayer, 1999; Barton et al., 1980; Shield & Aronson, 2003). Several residents spoke of this lack of control in the context of incontinence. For them a lack of control meant having to rely on staff to change incontinence pads and wiping one’s bottom, tasks that they considered dirty. This lack of control in relation to dependency also emphasises to the resident their physically restricted self. When residents need attention that cannot be controlled by them, life is dominated by the needs of their physical bodies:

Oh yes I would like to be able to dress myself but at the moment I couldn’t care less because I am in so much pain from my arthritic hands (Elsie, 89, RH5).

Social milieu in residential care
Making sense of the social worlds of the residents provides a further dimension to the foundation of residential care. The social milieu of residential care is a critical component of both quality of care and quality of life for residents (Bland, 1999; Henderson & Vesperi, 1995; Nay, 1993). The majority of residents in this study described how family and individual staff members provided them with the means to ‘pass the time of day’. Some residents talked to family on a daily basis:

Every morning just before morning tea my daughter phones for a chat (Lara, 85, RH3).

Others emphasised family visits:

I love the way my granddaughter drops in on her way home from school most days. It’s the highlight of my day (Alice, 85, RH1).
For other residents it was going to daily newspaper readings as a way to keep in touch with what was going on in the outside world as well as catching up with other residents. Residents also enjoyed talking with their caregiver and catching up on the caregiver’s family news.

Increasingly, studies exploring social interaction in residential care homes have focused on understanding aspects of staff, resident and family interactions (Henderson & Vesperi, 1995). This growing body of evidence indicates that many families maintain regular contact with their older family members in residential care and often continue to provide assistance with varying tasks such as feeding, taking residents on outings and providing transport to medical appointments. Staff relationships with residents have been reported generally as providing kindness and spontaneous displays of affection. At times staff have helped with transporting residents to visit sick family members, doing their personal shopping and taking home residents’ delicate washing to launder (Bland, 1999). The current study reinforces these findings.

**Family relationships**

Just like their relatives in care, family members are required to negotiate and redefine their role in the outside world in relation to the unfamiliar rest home setting. Finding a way to negotiate meaningful family roles within the rest home involves considerable skill development over time (Hertzberg, Ekman, & Axelesson, 2001). While previously families may have visited residents still living in their own home while they were partaking in meals, watching TV and in social interactions, social occasions were now dominated by meeting some physical requirement of the resident such as taking them to hospital appointments, sorting out clothing, or talking to staff about current health issues.

Many of the residents in this study indicated that spending time with families inside the rest home, or visiting family and relatives in the community, was a key social activity for them. Those who had no close family in the area tended to make themselves useful by starting up a gardening patch in the rest home grounds, walking
around the local area, or attending communal activities arranged by the activities coordinator in the rest home, such as newspaper reading and crafts.

Residents in this study tried to make meaning in a place that was constantly driven by the need for organisational efficiency, which often overlapped with attempts to make the rest home a homely environment. As Diamond (1992) notes, older people living in institutions have had a prior existence; residents in this study frequently commented during their interview about their home and garden and what social activities they were involved with prior to entering the rest home. The residents framed their previous roles in terms of a sense of purpose and achievement.

Filling in time
Many of the residents in this study indicated they found it very difficult having nothing ‘useful’ to do. Several women in this study commented that meal preparation and baking had been an integral part of their lives and would have filled in the days and allowed a social role associated with food provision:

*Let me do something, I would be really happy. If there was any way I could do a bit of cooking (Elsie, 89, RH5).*

Other residents found that helping others (residents) filled a need, as well as filled in the time:

*When I am in the dining room I will help others less able than myself at my table. The poor dears, it is so sad and the staff is so busy serving the meals. Anyway it gives me something to do. And it’s good you can still do those things (Ena, 90, RH5).*

It is paradoxical that staff are often overworked and residents often have little to do, which can reinforce a sense of uselessness on the part of the residents (Nolan, Grant, & Nolan, 1995). Savishinsky eloquently describes nursing homes as places that provide an environment that constantly ‘dims and dulls the mind that makes residents think about the pointless, painful days to come’ (Savishinsky, 1991).

While this may be true for a number of residents interviewed in this study, Diamond argues that this sense of doing nothing, or what he terms passivity, is in fact a very active existence. It takes a lot of effort, as described by residents; to not only manage their disabilities and medical problems, but also to manage their relationships with
staff and other residents and to try to make themselves content. Essentially residents curl in socially, as they are continually remade into patients. This term ‘curl in’ does not mean passivity: life inside the rest home is neither restful nor passive nothingness; it is a ‘repository of effort’ (Diamond, 1992, p. 250).

It may, however, appear passive to outsiders, including a researcher, when first entering a rest home. In fact this is a reflection of not knowing anything about the older people, other than the fact that they are generally grey haired, walked with a frame, speak very little and look at visitors with eyes of curiosity. Over time, the reality of existence in rest homes unfolds, revealing the relentless effort and striving that accompanies filling in time as residents themselves undertake the work that largely determines their quality of life.

The residents in this study have provided insight into how they construct themselves into the identity of being a resident. The roles they play within the residential care setting are both interesting and complex. They showed how they developed their own routines, created their own social networks and made their own meanings of living in a rest home. The words and emotions expressed showed a uniqueness or individuality providing evidence that residents are acting out relatively unique and meaningful existences. This is not passive at all, but an active forging of a new way of living, developing new defenses against losing a sense of self and purpose.

5.3 Staff Perspectives

This section provides insights and the meanings associated with caring from staff who participated in the study.

5.3.1 What brought them to care-work

The caregivers in this study came to the job either by word-of-mouth, or having previously worked as a domestic cleaner in the rest home. Moving from a domestic role to a caregiving role appeared to be a natural progression. As one caregiver commented:
I started out as a kitchen hand at another rest home and I got to look after the residents when they were short staffed so that’s how I got started (Fine, CG, RH5).

Several caregivers commented that their observation of caregivers interacting with the residents provided them with the confidence to apply for a caregiving role. For other caregivers having older people around them as they grew up was a pull to pursue a career in caregiving:

*I think I thought at one stage it was probably my calling in life because I was actually brought up by my grandmother. They always seemed old and always seemed to need a lot of attention. I find I am comfortable in older people’s company* (Irene, CG, RH2).

*Yes I was brought up with them [older people] as a kid looking after your grandparents and whatever with your mum and dad. I never wanted to be a health care assistant, I wanted to be an air hostess but because as I was brought up caring for elders when I was young that’s what I became* (Kath, CG, RH3).

For the nurse managers and registered nurses, involvement in residential care work was more about convenience than an active career choice. Several of the nurse managers described how they initially worked part time during the years of raising their children before applying for full time management positions:

*In this rest home in particular I started 14 years ago. When I was ready to come back to work I wanted part time work, wanted something which I thought would be close to home because I lived out in the wop. I found a job here doing weekends registered nursing. And that’s how I came to working in rest home care* (Linda, NM, RH4).

*I didn’t have anything to do with nursing for 15 years so I then decided to go back to nursing. Public hospital was a bit too daunting so I thought I must be able to cope with a rest home but I didn’t actually know much about rest homes* (Clare, RN, RH3).

Whichever pathway lead staff to choose working in a particular rest home, staff in this study had lengthy work histories, on average 10 years and over in caring for older people in the same rest home. This is in direct contrast to the international literature which suggests turnover of professional and paraprofessional staff is of grave concern (Stone & Wiener, 2001). This might suggest that the caregivers working in rest homes in this study had higher job satisfaction than in studies undertaken in other countries.
5.3.2 Transitioning to the care giving role

Coaching and caring

Unlike the residents who describe the process of transitioning to ‘being a resident’ as very much an individual and personal experience, staff talked about transitioning into the role of caregiver with reference to the support of another care worker. The main factor identified as important to this process was someone who the caregiver saw as a role model or mentor. For some, it was someone who had the time to listen to care issues that had arisen, while for others it was someone they considered a close colleague who they felt they could trust and confide in. Clearly they felt that whoever this person was, having a mentor was considered essential to their settling into the everyday life of rest home care. As Kath expressively describes:

\[D\text{ she is my role model couldn't get a nicer boss than D. Her whole nature, how she approaches things, you know like, for example, if you have done something wrong she pulls you up in the office and tells you. Not like some other managers who just tell you there and then and it can be so embarrassing you know – She talks to you quietly in her office in a nice way – while she is talking to you, you feel like a human being (Kath, CG, RH, 3).}\]

Ways of learning to be a caregiver in residential care

Asked how they learnt to be a caregiver, all caregivers cited ‘on the job’ training. They talked about ‘buddying’ with a senior caregiver for several shifts before having their own case load as one way, or being “thrown in the deep end”, as the other most common way of learning the caregiving role.

The majority of caregivers had completed some formal training programme, a New Zealand Qualifications Authority caregiving course being the most popular. Most caregivers in this study had completed this course a number of years earlier. Surprisingly, when asked what recent training they had attended, most caregivers said they did not need further training, commonly making comments such as having nothing left to learn:

\[Not\text{ any more [training course], I feel I have been here long enough and I am alright. I know it all now, I have done all the courses out and I have worked here for 10 years and I have worked hard I don't need to bother any more (Kath, CG, RH3).}\]
Caregivers believed that working with the elderly for considerable lengths of time was sufficient in the care work that they carried out on a daily basis:

\[\text{Well it [training] helped me understand. I have been doing it for so long everything I learn I know (Kelsey, CG, RH1).}\]

For caregivers participating in this study, ways of gaining knowledge appeared at times to be less than adequate. However, as other studies have shown, care work is more than just a job Secrest et al (2005), a view held by most of the staff interviewed:

\[\text{I love older people, the more time I spend with them the more I love them. You know they are probably the best part of the job really and I like being able to talk to them and joke I like being able to talk to them and the more I talk with them the more I like them. And I respect them I guess. And where they come from (Fine, CG, RH5).}\]

A caregiver’s inadequacy of knowledge was apparent particularly around the understanding of dementia and the older person, illustrated by the following comment:

\[\text{Well some of them [the residents] are so funny the way they talk, you know they talk funny. I heard on the radio that you know that we are just caregivers, we are not a trained nurse so we don’t know what to call it [do you mean dementia] yes that is what I mean (Kelsey, CG, RH1).}\]

Addressing the issue of caregivers’ lack of understanding and the need for continuing education, particularly with dementia care, has been highlighted in a randomised control study by McCallion et al (1999). The intervention group was assigned to an enhanced educational programme on dementia care while the control group of caregivers received no training and provided usual care during the intervention period (McCallion et al., 1999). Following the six month intervention caregivers in the intervention group felt more empowered and better able to communicate with the residents they cared for. This showed an overall effect on the nursing care provided to dementia patients.

In this study both nurse managers and registered nurses made reference to ongoing educational training needs during the interviews. The registered nurses’ preference was to attend only rest home in-service educational sessions, relying on these monthly education sessions to provide updates in current gerontology best practice:
We had a problem with two residents becoming involved (close relationship). We didn’t know what to do so Dr (X) did a session on sexuality and older people. This really helped me understand and deal with the situation (Clare, RN, RH3).

Three of the nurse managers were completing post graduate studies in gerontology or management:

This is my time; I can take more on board. I have taken on studying this year I am doing some management papers (Sue, NM, RH5).

Globally the uptake of post graduate nursing education in all specialties, including gerontology, is on the rise as gerontology nurse leaders and academics progress career pathways and engage in research that supports evidenced based practice (Nolan & Cooke, 2000).

Getting caregivers to attend training sessions remains problematic even when offered training initiatives, including reimbursement of travel and personal costs for off duty staff and pay increments for completing courses. A workforce survey completed in 2004 showed national attendance rates for rest home caregivers for both training and in-service sessions was relatively poor (Parsons & Dixon, 2004). A more recent report cited a median caregiver attendance rate of 70% who regularly attended educational sessions, which is somewhat higher than home based caregivers whose attendance rate was on average 40%. This is comparable to international studies which show similar results in the uptake of caregiver training (Parsons & Dixon, 2004).

Improving quality of care in rest homes is challenging, and a recent report from the USA argues that little will improve clinical practices while caregivers and other health professionals continue to lack the required technical expertise due to lack of education uptake (Stone & Wiener, 2001). Many common sense interventions can improve the quality of care. For example, several controlled clinical trials have demonstrated that urinary incontinence in most residents can be improved with simple toileting assistance programmes (Schnelle et al., 1995). However without such knowledge little will improve. A recent study that delivered an education programme of 10 interactive sessions that included nutrition, caring for residents with dementia,
falls prevention, and restorative care showed a positive effect on the quality of care after the intervention (Smith, Kerse, & Parsons, 2005).

Ways of making caregiving work easier
Caregivers felt being organised made the job a lot easier:

*If I wasn’t very organised I wouldn’t be able to cope with the day-to-day needs of having to get everything done (Fina, CG, RH5).*

*I have my dinner break at noon and back on the floor, get the dishes then I lay the tables which brings me round to 1pm. Then I write my report. I have been here so long I know the ‘window’ is about 2pm (Irene, CG, RH4).*

The ‘window’ described by Irene was the time caregivers knew was available to catch up with any tasks that had not been completed during the morning. The caregivers in this study were always aware that one sick resident or extra demands from residents could set them back considerably, preventing them from getting all the tasks completed before lunch. One caregiver provides insight into the daily pressures of care work:

*Not getting distracted from the tasks means the work is done efficiently. I mean when you get 12 - 13 residents to look after, it is easy to move along when you stop doing the little things, but if you have people you have to shower or get out of bed and give drinks, that spare time is taken up, it’s all about what how to manage the workload. (Nat, CG, RH4).*

Finding ways to make the work load easier was a consistent theme. Caregivers discovered by observing how other caregivers cut corners that the work could get done in a timely way. These corner cutting practices were seen as pivotal in order to get the job done. The work was seen as being relentless, demanding and at times monotonous but by cutting corners it made the work more enjoyable.

Once they had learned ways to ‘work the system’ the burden of care became just a little bit easier. This rarely had any relationship to residents’ needs, however, as this caregiver illustrates:

*I mean even if I did think, like give them (the resident) a sink wash it is probably slower to do that than a shower. I have learnt getting them to the bathroom is quicker and easier (Mary, CG, RH2).*
This is a view shared by caregivers in an observation study at an American residential care facility:

> When it comes to that, you are too busy to do it right for the resident; you just need to get it done. Isn’t it a shame to treat our residents like that? Yet it’s the only way to get done before the end of the shift. (Foner, 1994, p. 122).

Evidence has shown that if time management skills are not learnt during the orientation and training phase, a high percentage of caregivers will leave. Pillemer (1996) found in his study that 40 to 50 percent of all care assistants leave during the orientation and training period. Caregivers become frustrated by their inability to get everything done, develop low self esteem, high stress levels, and disillusionment with their job. Similar results have been reported by Straker and Atchely (1999) who concluded that some caregivers left because they did not like the work or were dismissed because they could not do an adequate job due to poor time management skills during the initial stages of employment.

Nurse Managers and registered nurses appeared to manage their work schedule despite difficulties arising from the acute medical problems of the residents and/or staffing matters. On the whole nurse managers and registered nurses worked eight hour days whereas the caregivers tended to work four to six hour days. This might explain why despite unpredictable busy days the nurse managers and registered nurses appeared to cope more easily:

> I have had a fractured neck of femur, and a lady who has fallen and broken her nose. I have sent someone else to hospital with abdominal pain. So I think I have had a very busy morning. But that’s unusual, most unusual, but you have those days. I am now catching up on all the other stuff like the paper work before I go home (Denise, NM, RH3).

**Being a care worker**

Caregivers constitute the largest group of workers in long term care facilities. They have more interaction with the residents than any other member of the staff, providing approximately ninety per cent of hands-on cares and serving as the ‘eyes and ears’ of the nurses they report to. The job is physically demanding. Their responsibilities vary depending on the particular facility, but virtually all caregivers
help residents dress and undress, transfer, and with toileting, and report any change in condition of the residents that they are caring for to the registered nurse.

The care giving role draws heavily on women’s roles as mothers. Indeed, caregivers view the work as an extension of the nurturing family role (Foner, 2004, p.104). She found that the caregivers draw direct parallels with physical aspects of the job, describing care-giving as ‘mothering’ work. One caregiver in this study provided a similar view of the role of a caregiver in a New Zealand context:

*Helping the elderly with their daily routines – showering, put their clothes out and helping them get dressed, doing things for them, helping in every way (Linda, CG, RH3).*

Other types of caring were frequently described by the participating staff. Emotional caring was one such term. One nurse manager explained how emotional caring is important in residential care:

*You think to yourself sometimes: You [the resident] are losing all your contacts, they are all dying. Your spouse is dying, your friends are dying, often your children are dying so you often have no one to put your arms around you and give you a hug. And I think I don’t mind doing it [giving a hug] and I don’t mind the staff doing it. You know if I see someone with their arms around them giving them a hug, I don’t think, oh you are in their space. Our residents are able to tell us if we are in their space (Sue, NM, RH5).*

This view is shared by Hochschild (1983) who agrees that emotional caring has traditionally been part of caregiver roles in a number of settings including long term care facilities. Interestingly this study showed that often care workers are required to suppress the feelings of emotional labour in order to get the more pressing physical tasks completed.

**Having good and bad days**

In between the physical and emotional demands of the job, caregivers in particular had little say in the day-to-day running of the wards they worked on. Caregivers talked about heavy case loads, the frustrations, and lack of recognition regarding the demands of the job. Knowing that they had good days as well as bad days, and knowing that the residents have good and bad days, helped them cope with the daily routine tasks, illustrated by several caregivers:

*You have your good days and your bad days. I love it, very challenging, very rewarding. When I have my bad days I think a lot about these people and*
what they have been through is incredible and the experiences they have had, it becomes very rewarding in the end (Anne, CG, RH1).

Kat describes the relentless heavy work that each caregiver is expected to carry out daily:

*We have to look after 13 residents each – it is a lot, in the hospital you only get 6 residents here you get 13 and that’s 13 beds you have to make* (Kat, CG, RH3).

Perhaps caregivers felt some sense of hopelessness when they talked about the dependency of the residents and their inability as caregivers to ‘be there all the time’;

*Well there is one that grates just that I could choke her some days when she is demanding. Not really and most of them are just lovely they have got as much to offer us really and their experiences of living* (Kelsey, CG, RH1).

*Yes but sometimes it’s annoying sometimes they come and get me and I can’t be there all the time you know – I don’t always do it because I think I can’t be there all the time. It is really hopeless at times* (Kath, CG, RH3).

Caregivers in this study said that when they went to seek support and guidance from the registered nurse on the floor they were often unsure how the nurse would respond to their request. Anticipating a negative response was often talked about with a sense of dread:

*I would go to the registered nurse on duty to go and get help but you knew they wouldn’t always help so you would have to do it yourself or battle with yourself* (Kath, CG, RH3).

The registered nurse on the other hand felt the demands for their time were unwarranted, that caregivers were just not performing their duties for varying reasons.

*Don’t know if they are being lazy. No, that’s not true, they are hard working but sometimes I just think they can’t be bothered today* (Judith, RN, RH1).

**The daily routines of care work**

The basic tasks in a typical day shift sound straightforward and simple. As one caregiver summarised:
In the morning I get the residents up and dressed and make beds and give one or two showers. I help with morning tea, and take a few residents down to the lounge to join in the activities. Then lunch. After my lunch I write up notes if any changes have happened. I go home at 1.30pm (Mary, CG, RH2).

What appears to be a set of simple tasks may become complex at any given time. Residents may present problems every step of the way. Caregivers defined this as ‘little things going wrong’ and ‘things slipping out of line’. As illustrated by Nat and Irene:

Little things going wrong or something like the report taking longer just one thing that would slip out of line and throw your whole day out (Nat, CG, RH4)

It can seem like everything is all higgledy piggledy, when you get very busy. And I am used to routine. I need routine (Irene, CG, RH2).

Evidently, caregivers in this study felt pressure within themselves to strive constantly to maintain a routine so that entire tasks were completed before the end of the shift. Full time caregivers recognised that they felt less stressed than the part time caregivers who often didn’t get off on time, particularly if the rest home was short staffed:

I don’t mind, if I have been busy in the morning then I can get those little things done before I go home at 3pm. It is harder for the one’s who have to finish at 1pm they often don’t get off on time. Especially when we are short staffed (Kate, CG, RH3).

Caregivers found that ‘knowing’ the resident was important in assisting them to get through the daily routines of care in a timely manner:

You just have to know them; you know their cares, what they want and if they need help or if they don’t (Kelsey, CG, RH1).

Some caregivers talked about the benefits of knowing the residents and enjoying the challenge:

I like a challenge and I like the difficult ones because a lot of people can’t handle them, but I can that’s what I like. I know them, that’s why (Kath, CG, RH3).

Others felt that knowing the resident was not just about getting the daily tasks done; it also helped with knowing when the resident was unwell:

Knowing when they were out of sorts. It’s really important (Mary, CG, RH2).
However for some caregivers knowing the resident had its drawbacks as Kath explained:

*Sometimes they come and get me but I can’t be there all the time you know – I don’t always do it because I think I can’t be there all the time. I think they should try harder to get to know the residents’ ways* (Kath, CG, RH3).

Other studies have found strong evidence that knowing the older person has a lot to do with quality of caring. For instance, Nolan (1993) showed that successful caring was about knowing and being in a reciprocal relationship (Bowers et al., 2000; Nolan & Grant, 1993). Opie (1991) found that reciprocity and the knowing of the care recipient were integral to successful care giving in community settings. The current study reinforces this in the residential care setting. Knowing the resident also provides a more resident-centred approach to caring (Clarke, Hanson, & Ross, 2003). The knowing provides the carers with an increased awareness of the resident as a person, resulting in individualised care that can be constantly evaluated and adjusted to meet any change in residents’ needs. This view has been refuted by Bland (1999), who found that, on occasions, knowing was in fact merely superficial, based more on assumption than real understanding. Bland blamed this superficial knowing on the lack of consistency and continuity of staffing. In facilities, staff turnover and the use of agency staff prevents the knowing described by these authors from occurring.

Nevertheless, the residents in this study were generally able to maintain some kind of reciprocal relationship with caregivers and other staff as described previously in this chapter. Caregivers grow close to at least some of their residents only to watch them suffer losses and indignities, become unwell or die. As one caregiver commented:

*If you think it’s easy (care giving), then think again. It’s demanding and overwhelming, and some days everything will hurt ….including your heart* (Irene, CG, RH2).

Meanings of independence

The meaning of independence was described by staff in varying ways. Generally, the caregivers talked about independence as:

*Letting the residents do some small tasks such as putting on their own shirt but then doing up the buttons to hasten the dressing process* (Kate, CG, RH3).
As noted earlier the residents constantly battle the rules and routines in order to remain independent in an environment that discourages spontaneity, which in turn has negative consequences, essentially shaping the residents towards a model of dependency:

*Sometimes I need to just go and offer a wheelchair when I am in a hurry it is so much quicker. I have to do the same when I am showering and dressing my residents I’m just not giving them a chance to do things for themselves any more. I’m just too busy (Nat, CG, RH4).*

*When they first arrive (I might offer them extra help), then of course when I think about it this gives them the idea that they don’t have to walk down there any more (Mary, CG,RH2).*

The registered nurses and nurse managers in this study described the meaning of independence in a more hypothetical way. One view was that the residents felt that coming into the rest home meant they could ‘rest’ and have most of their activities of daily living done for them; these staff felt it was extremely difficult to change the mind set of those residents. As one nurse manager recalled:

*As far as my role here I am very organised and if I wasn’t very organised I wouldn’t be able to cope with the day-to-day running of the place and co ordination and what-not you need that. I believe that people [the residents] should be given the opportunity to maintain their independence. That’s often a battle when they think they are coming to a rest home, they pay to be here so they think everyone should be doing things for them. So that’s a challenge to try and change the mind set of the people (Linda, NM, RH5).*

The caregivers strived for control in the detail or tasks of their job and had definite ideas as to how things should be with the residents, the rooms and the facility environment:

*Yes I have been thinking I have been doing too much for these older people not so much about taking their independence away, but getting things done for that day (Nat, CG, RH4).*

*There’s a right way and a wrong way and then there is my way. Well my way’s right. It’s just that everything needs to be done in order (Irene, CG, RH2).*

The tyranny of time
This category depicts the notion of time. The caregivers complained about working in a routine that constantly involved getting the task done against a ‘perceived’ time
constraint. The consequence of this impacted on the caregiver’s ability to provide good individualised care. For instance being flexible is difficult, as one caregiver summarises:

You try and it doesn’t work and so you think, right I’ll go and do somebody else, and you come back later and you try again and if that doesn’t work well, that’s it for the day, your whole routine is gone and you are not going to do all the little things that the residents like. For example, if I have time left over I would paint Mrs’s S fingernails, or take Mr R outside for a walk. They miss out on the little things (Mary. CG, RH2).

On the other hand the registered nurses and nurse managers appeared to support the idea of individualised care and did not feel the same time pressure, perhaps because they had better time management skills:

Doing things, it’s just allowing people to do what they want to do. I think I am fairly relaxed about many things so I try to get staff to just take things as they go. Mostly everyone does that. Mostly the residents do what they want to do, but occasionally there are residents who don’t want to do it and they do it their way and it’s really hard to get the staff to accept that mainly because of the time factor (Denise, NM, RH3).

If the caregivers were up to date with all their tasks you would find them engaging in the emotional caregiving role, as observed by one of the registered nurses:

If all is going well I will see the caregivers sitting talking to the residents, taking them for a walk, or sorting out their clothes (Clare, RN, RH3).

This idea of flexibility constrained by time has been studied by a number of researchers. Henderson and Vesperi (1995) explored the commodity of time and its meaning in long term care facilities. They found that the culture of time in these facilities is linked to the traditional medical care models that dominate care practices internationally. In these terms time is not just a tracking tool; it not only tells staff it is time for lunch and time that their shift is finished, it is also a commodity that can be wasted, conserved, or correctly used (Henderson & Vesperi, 1995). In fact, this commodity of time has such a high value that it becomes in a sense virtually sacred and has been referred to as ‘the cult of time’.

This cult of time is seen to infiltrate the very core of care work in long term care facilities as the basic tasks compete relentlessly for and against time. An overriding
issue explored in-depth in Chapter 8 is how the Promoting Independent Living intervention impacted on the task and time for the staff involved in the study.

The ‘cult of time’ has also been related to the situation of understaffing. When asked to describe their average contact hours with residents caregivers and registered nurses in this study it was found to be approximately four hours contact time per resident per day. These figures are similar to other studies that have explored caregiving contact hours. In the National Disability Support Workers Survey undertaken in 2004, residential care caregivers reported direct client contact hours as a median of 4.4 hours, with a minimum of 0.5 hours per day (Parsons & Dixon, 2004).

The registered nurse is a very scarce resource in rest homes. In the USA total direct patient contact hours for a registered nurse hours were 0.6 hours per resident per 24 hours and this represented only direct patient contact of 12 minutes per 8 hour shift (Stone & Wiener, 2001).

With one caregiver responsible for nine or more residents on a day shift, and twice as many on an afternoon shift, time management often degenerates into prioritising what tasks are more urgent. Cares including meal service, preparing for bedtime, and evening showers are given on a tight schedule and at the convenience of the rest home’s routine rather than that of the residents, leading to less than satisfactory care:

> When it comes to that, you are too busy to ‘do it right’, you just need to get it done. Isn’t that a shame to treat our residents like that? Yet it is the only way to get done before the end of the shift (Kate, CG, RH3).

As described earlier in this chapter, caregivers learn many crucial skills on the job. Sadly, often the skills that caregivers appeared to learn that directed their care work in reality was ways of cutting corners that allowed them to put up with heavy workloads. This does not always permit or account for individual resident’s needs or preferences, so knowing the resident is not the only influence on provision of care by the caregivers. Scattered throughout the analysis was the notion from caregivers that residents who are able to express themselves coherently for at least some of the time are preferred by the caregivers. This has been found in other caregivers’ studies; for
example Shield and Aronson (2003) found that workers favoured those residents who do not complain or ask for too much, and in Nay’s study (1993) caregivers stated that the coherent resident was easier to care for. Attitudes and behaviours, key themes which thread through qualitative studies exploring the perspectives of both staff and residents, were consistent with the PILS study findings. These are further discussed in the following section, as we continue to build the foundation under which the PILS intervention was developed and implemented across the five rest homes enrolled in the study.

**Actions speak louder than words?**

The caregiver’s attitudes may well influence the way health professionals respond when asked for advice or help. Caregivers felt that they were often not listened to, or that when a resident’s problem was heard, the registered nurse did not always respond in the way they (the caregiver) wished. As illustrated by one of the caregivers:

> What I would like to do is shake her and tell her what she is doing, but you can’t do that, you just have to try and encourage them. It’s up to the sister in charge to point out the obvious, isn’t it. All I can do is try and persuade her. I have got her in the lounge but she will only eat a little bit (Irene, CG, RH2).

Comments such as Irene’s and other caregivers in this study often cited that it was highly unusual for a registered nurse to spend any significant amount of time with the residents, particularly with the daily physical tasks of bathing, dressing and mobilising residents. Consequently, the caregivers felt resentful and complained that registered nurses did not understand the sheer enormity of their physical tasks and the time it took to do them (Jervis, 2002). This belief was held by all caregivers who were interviewed in the current study. Foner’s study (1994) certainly reiterates these feelings:

> Most registered nurses feel that we (the caregivers) have enough time to get their work done. It is just a matter of using it (time) properly (Foner, 1994, p125).

Furthermore, caregivers in Foner’s study also reported that the registered nurses did not understand the emotional strains of the job. As one caregiver retorted angrily:

> ‘They really make you feel your place, so then you just act that way’ (Kath, CG). For the lower
levels of the hierarchy “feeling their place” was interpreted as being at the bottom. Caregivers have little input into decisions about residents’ care in the development and review of care plans yet they have the most up-to-date information about the residents they are looking after.

Nursing hierarchy or chain of command is apparent and very prevalent in the rest home industry. Nursing hierarchy has been well researched in a number of health care settings but perhaps none is more evident than its description relative to long term care facilities (Foner, 1994). A study that explored the meaning of good work and good care in nursing homes found that in facilities where all staff played a significant role in decision making processes regarding the running of the home, the level of staff performance and commitment was greater than in those facilities that did not welcome staff input into management of the facility and care plans of the residents (Moos & Lemke, 1996). The value of incorporating staff preferences, believing that by including staff ideas and suggestions staff morale improved, was also emphasised.

Team work: Reality or myth?

Despite having to ‘get the work done’ and learning from each other how to cut corners, a sense of team work was not strongly evident from any of the staff interviewed. It was envisioned that an effective team would be essential when implementing a new way of doing things within the Promoting Independent Living intervention. There was some evidence that staff in this study were able to demonstrate this cohesiveness; the caregivers and nurse managers expressed a belief that working in this way more often would benefit all. They felt that this study may provide the mechanism to integrate this style of teamwork into the daily routine:

….must be a team. You have got to have a team. You have to take them with you (caregivers) and allow them to do things; you have the authority to yes you can do it this way but going with them. Not to say this is what we will do but to say this is how we will do it together. There has to be a commitment…. (Denise, NM, RH3).

Much of the research on teams in the work setting has focused on interpersonal processes that occur within the team (Firth-Cozens, 2001). These include aspects
such as communication, coordination, conflict, cooperation and trust. The caregivers in this study have described how very little cooperation occurs between themselves and the registered nurses or other work colleagues, and that overall communication is problematic.

Studies that have explored team work in long term care facilities suggests that in low performing teams, poor communication, lower levels of trust and less cohesion between team members is apparent. Binstock and Spector (1997) found that long term care facilities with a traditional management style and practice have a clear hierarchical structure and chain of command. This type of management style has been shown to have a trickle down effect on staff morale and satisfaction. This was described in this study:

*If the manager or RN would come and make beds when we are really busy this would make such a difference to how the day went, really it would. We could go home knowing that we worked better together but I have never seen that happen ever in all the years I have worked here* (Mary, CG, RH2).

Recent innovative initiatives to improve quality of care in long term care have found that self managed teams have been a way of ‘turning the tide’ of staff turnover and staff satisfaction (Stone & Wiener, 2001). Likewise, Yeatts and Seward (2000) found that nursing home teams where leaders encouraged participation, where management’s unspoken message is that the team holds the primary responsibility for monitoring its own performance, performed better. Teams which had good information sharing processes in place, and where help could be counted on from management, were more likely to perform well. It has been shown that if a team becomes flexible, adaptable and diverse the team members will be capable of learning and will change over time (Hackman, 1990).

**Staff relationships**

The informal work culture that includes friendships with other staff was felt by the caregivers in this study to make work more bearable. The staff particularly emphasised informal socialisation with each other. The caregivers talked about talking, joking and chatting with each other whenever they had the chance. During these conversations the caregivers described how they would vent their work related frustrations among themselves rather than getting annoyed at the residents.
The caregivers clearly showed that when they had a good work relationship with the other caregivers this helped enormously as they could then help each other in caring for the more complex residents together. As a result they had an ‘easier time’ doing their job. Residents also benefited, as co-operation between caregivers led to better quality of care for them; for example, two person transfers happened more quickly. This work culture that may develop amongst caregivers adds an important dimension of sociability and interest in the job. This view was shared by caregivers in this study, who talked about ‘sharing family stories’, ‘practising together to perform cultural items for the residents’ and ‘sharing food at lunch time’. Caregivers felt this provided them with a sense of belonging, evident in this study in part by the long duration of employment of many of them.

Pillemer’s (1996) study, which explored the meaning of work for nursing assistants in long term care facilities in the USA, found that frequent turnover hurt staff morale by weakening the sense of belonging people get from ‘a stable group of work friends whom they know and trust’ (1996, p. 56). Often caregivers come from similar ethnic backgrounds and share special burdens and problems that come with minority status (Diamond, 1992; Foner, 1994; Kiata & Kerse, 2004).

In exploring the characteristics of caregivers Tellis-Nayak and Tellis-Nayak (1989) found two distinct categories: strivers and endurers. Caregivers were labeled as such, not for their years of service but for their attitude towards the job. The strivers had higher job satisfaction and would often complete some further caregiver training, while the endurers had low job satisfaction, had worked in the caregiving role for a number of years, and had no ambition to improve their career options. They also noted that caregivers in their study shared a common denominator: their socio-economic class. They were mostly women, the least educated, the least skilled and the lowest paid. They found that to be successful as caregiver employees had to find ways to work within this milieu of disadvantages, and a unique work culture developed in the residential care facilities. Caregivers in this study were certainly all women and had little training or qualifications. Several had completed the ACE caregiver training course with an increase of fifty cents to one dollar in their hourly
rate of pay on completion of the course. This was consistent with the results from the National disability workforce survey carried out in 2004 (Parsons & Dixon, 2004).

**Relationships with residents**

Meaningful relationships with residents and family are interwoven into caregiving work. The staff, in particular the caregivers, talked to the residents about:

> What had happened the night before, what they were doing over the weekend and what days off they were scheduled for in the coming weeks (Fine, CG, RH5.).

All staff talked about particular residents they had close relationships with and who they went the extra mile for. This finding is consistent with a number of other studies that talk about the friendships between residents and individual staff members. For example, Savishinsky (1991) observed the makings of meaningful relationships between residents and staff.

Caregivers and other staff in this study described a different relationship with residents who could not communicate through the usual channels because of difficulties such as a hearing loss, speech problem or dementia. Caregivers talked about “not being so close to these residents” and “having less knowledge about their past and families.”

Gaugler (2005) found that staff who were not close to the residents initiated and chose the content of conversation. The most common topic in morning time conversation was residents’ health and sickness. Diamond (1988) explored the social connectiveness between staff and residents in his ethnographic study and found that caregiving tasks are performed within the context of social interaction. He felt this was critical in the caregiving relationship: ‘It depends on if you like them and they like you, and if you know them pretty well. If you like them it’s like your baby’ (1988: pg 49).
Relationships with families

Caregivers in this study infrequently mentioned families, but when they did it was to express that the families “did not understand the pressure they were under to get their relatives ready for an outing or an appointment” (Kate, CG, RH3). They spoke of their disappointment that family members seemed to complain about what the resident was wearing and not being ready on time. They felt they gave little thought to whether perhaps the resident themselves insisted on wearing a particular item of clothing or that the resident did not really want to go.

In a study exploring family and staff relationships in long term care, Ryan and Scullion (2000) found that for most registered nurse and caregivers, their relationships with residents’ family members were their greatest source of job satisfaction. But those same relationships are also one of the greatest sources of frustration for most caregivers. In-service education that emphasised interpersonal communication was shown to maximize this interaction positively (Rowles & High, 1996; Ryan & Scullion, 2000). The nurse managers understandably had a more positive perception of what relatives and family members need and expect:

But I think for myself its about the association with the families that you have a rapport with them, because I know that with my own parents and grandmother that we felt quite strongly about what we wanted for them and we are able to have wonderful relationships with the families and it works out well but sometimes it take a lot of work, you need to be available when they [the families] are available (Sue, NM, RH5).

Clearly being available to provide up to date information to relatives was important to this relationship and although not discussed at any length by the staff in this study, other studies have shown that this is one of the critical factors in providing good quality resident-centred care (Kitwood, 1997).

5.4 Discussion

Overall the emergent themes identified and discussed indicate that being a resident or staff member means transitioning and adapting during the early period of providing and receiving care in residential care settings. For residents this entailed endeavouring to maintain a sense of identity or selfhood against a backdrop of ill health and disability. For caregivers the transition to becoming a caregiver was
thought to be a lot simpler if they had initially worked in the facility as a domestic assistant, and consequently become a caregiver. For the registered nurse and nurse managers it was more about being a convenient place to work during the child raising period of their lives. Learning to be a caregiver was very much on the job training from another caregiver; however, for the older person it was very much a personal and individualised journey.

Adapting to new routines governed by rules and regulations was a continual mêlée for both staff and residents. Emerging themes suggested that the residents felt they needed to conform to the daily routine to make the best out of moving into the rest home; however they constantly battled to try and maintain some independence with many of their activities of daily living. This was in contrast to the caregivers and registered nurses who for a number of reasons, including time factors and staff shortages, appeared to place less value on independence for the older person. They often had the best intentions but overwhelming influences of the ‘institution’ prevented them from acting on them. Residents experienced this as having their control taken away from them. They used examples such as food and meals, including choices of food, where they ate their meals, and what time meals were eaten, to illustrate this.

Striving for a sense of control was just as relevant for caregivers and other staff. Caregivers felt that on the days they lost control they no longer had the ability to attend to the little things that residents enjoyed and that appeared to give them both a real sense of satisfaction. Both residents and caregivers contended that a positive relationship was founded on give and take. Particular themes were identified that made this difficult to achieve. Staff working with the tyranny of time, learnt to cut corners to get the work done, with little evidence that staff working together as a team was occurring. The residents, on the other hand, were constantly reminded that they had so much time and when staff cut corners this added little value to their lives, being a constant reminder of the emptiness of rest home life in general.

The social milieu within the facility provided a backdrop for social connectedness to occur between staff and residents. Caregivers, nurses and residents expressed social
connectedness in several ways. Residents commented how family and individual staff members provided a social network for them. Talking with families on a daily basis provided a connection to the community. Staff social relationships meant providing residents with kindness and spontaneous displays of affection, something the residents found very important in their lives. The caregivers and registered nurses also showed social connectedness with some of the residents as they talked about the friendships they had developed with certain residents which provided them with increased job satisfaction.

Although families were the essence of many residents’ lives, caregivers often felt families undervalued the caregivers, not really understanding the complexity of their work. In contrast the nurse managers saw urgency in ensuring that families remained informed of residents’ health and well-being.

These results extend the current literature on living and working in residential care. The findings show that there appear to be tensions inherent in working together as a team in order to get through the daily tasks of working in a residential care facility. However there were moments when the caregivers in particular enjoyed being flexible in the way they worked, allowing the residents to have more control in decision making.

This chapter has established how participating residents and staff perceived life and work within residential care. Understanding these views from different perspectives has ‘set the scene’ on matters that may arise during the development and implementation of the PILS intervention which was tested using a randomised control trial. The following chapters report the results.
Chapter 6: The effects of a repetitive activities of daily living exercise intervention on older people in residential care

6.1 Introduction

This chapter presents the results of the functionally based activity intervention delivered to older people in residential care. The focus of the intervention was to provide an individualised repetitive activity of daily living exercise programme to residents randomly allocated to the intervention. The impact of the intervention on residents and rest home staff enrolled in the PILS study was gained by interviewing participants at the completion of the intervention. The results of these interviews are presented in Chapters Seven and Eight. The results of the intervention have recently been published in a peer reviewed journal Age and Ageing (Peri et al; 2008; see Appendix 9).

6.2 Recruitment and retention of participants

A total of five rest home facilities were recruited to participate in the study. The size of the rest homes varied from 28 to 72 beds. Two of the larger homes comprised separate complexes on the same site. The other three homes were single complexes made up of separate wings.

A total of 208 residents were referred for screening to determine eligibility as potential participants in the PILS and 33 of the potential participants were ineligible. The main reasons for exclusion were acute ill health (n=22), terminal illness (n=6), or under the age of 65 years (n=5). Twenty six residents chose not to participate. A total of 149 residents were recruited into the trial, a response rate of 85%. Of this total, 73 residents were randomly allocated to the intervention group and 76 to the control
group. A total of 13 residents died, with nine deaths occurring after the three month follow up. Eleven residents transferred out of the rest homes; the most common relocation site was a private hospital. One resident withdrew from the trial at three months. Thus, six month outcome measures were obtained from 124 residents. Figure 3 shows the total number of participants overall and the flow through the trial.
Residents assessed for eligibility
N=208

Participants (n=149)

Ineligible (n=33) Refused(n=26)

Baseline interview (n=149)

Control (n=76)
Intervention (n=73)

Three month follow-up (n=138)

Transferred (n=3)
Died (n=2)

Control (n=71)
Intervention (n=67)

Transferred (n=3)
Died (n=2)

6 month follow-up (n=124)

Transferred (n=4)
Died (n=6)

Control (n=61)
Intervention (n=63)

Transferred (n=1)
Died (n=3)

Figure 6-3: Design

6.3 Baseline characteristics

The characteristics of residents at entry to the trial are outlined in Table 10. An evaluation of baseline characteristics of the resident sample was undertaken to see
whether distribution of characteristics was equivalent between groups. The randomisation process ensured a balance across key variables including age, gender, medication; support needs level, and functional status.

Of the 149 residents enrolled in the study, 23 males (15.4%) and 126 females (84.6%) participated. Gender was evenly distributed across both groups: in the control group there were 12 males and 64 females; in the intervention group 11 males and 62 females. After randomisation 76 participants were allocated to control (51.0%) and 73 participants were allocated to intervention (49.0%). Overall the mean age of participants was 85.69 years (range 64 years and 97 years). The mean age for participants in the intervention group was 86.77 years. The control group was slightly younger by approximately two years with a mean age of 84.66 years. Eight participants in the control group were in the young-old age group (65 years-75 years) compared to only two participants in the intervention group.

Ethnic identification was recorded from residents’ case files. It is not mandatory to record resident ethnicity on admission. One hundred and four residents had no recorded ethnicity. Of those recorded, New Zealand European was the predominant ethnicity in the intervention and control groups (53-61%). The demographic profile of the enrolled residents in this trial is consistent with current national demographic trends of residents living in residential care facilities (Statistics New Zealand, 2001a).
### Table 6-10: Distribution of residents’ demographic and function characteristics in the intervention and control groups

<table>
<thead>
<tr>
<th></th>
<th>Intervention N=73</th>
<th>Control N=76</th>
<th>Total N=149</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>62</td>
<td>64</td>
<td>126</td>
</tr>
<tr>
<td>Mean age (SD)</td>
<td>86.7 (5.4)</td>
<td>84.66 (6.7)</td>
<td>85.69 (6.2)</td>
</tr>
<tr>
<td>65-69 (%)</td>
<td>1 (1)</td>
<td>2 (3)</td>
<td>3 (2)</td>
</tr>
<tr>
<td>70-80 (%)</td>
<td>9 (12)</td>
<td>17 (22)</td>
<td>26 (17)</td>
</tr>
<tr>
<td>81-85 (%)</td>
<td>14 (19)</td>
<td>19 (25)</td>
<td>33 (22)</td>
</tr>
<tr>
<td>86-90 (%)</td>
<td>33 (45)</td>
<td>23 (30)</td>
<td>56 (38)</td>
</tr>
<tr>
<td>90-100 (%)</td>
<td>16 (23)</td>
<td>15 (20)</td>
<td>31 (21)</td>
</tr>
<tr>
<td>New Zealand/European</td>
<td>53</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>Other, including European and Australian</td>
<td>20</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Support Needs Level 2</td>
<td>9 (12%)</td>
<td>11 (14%)</td>
<td>20 (13%)</td>
</tr>
<tr>
<td>Support Needs Level 3</td>
<td>46 (63%)</td>
<td>53 (68%)</td>
<td>99 (68%)</td>
</tr>
<tr>
<td>Support Needs Level 4</td>
<td>18 (25%)</td>
<td>12 (16%)</td>
<td>30 (21%)</td>
</tr>
<tr>
<td>Mean AMTS score (SD)</td>
<td>7.0 (2.8)</td>
<td>7.0 (2.8)</td>
<td>7.0 (2.8)</td>
</tr>
<tr>
<td>Number of prescribed meds: 0 (%)</td>
<td>1 (1.4%)</td>
<td>2 (2.6%)</td>
<td>3 (2.0%)</td>
</tr>
<tr>
<td>Number of prescribed meds: 1-4 (%)</td>
<td>30 (41%)</td>
<td>31 (40%)</td>
<td>61 (40%)</td>
</tr>
<tr>
<td>Number of prescribed meds: 5-10 (%)</td>
<td>42 (58%)</td>
<td>43 (43%)</td>
<td>85 (57%)</td>
</tr>
<tr>
<td>Mean Barthel Index Score (SD)</td>
<td>17.81 (2.2)</td>
<td>17.55 (2.6)</td>
<td>17.68 (2.4)</td>
</tr>
</tbody>
</table>

**SD:** Standard Deviation  
**AMTS:** Abbreviated Mental Test Score, range 0 to 10, greater than 6 = normal cognition  
**SNL:** Support need level, a measure of functional ability range 5 (bed bound and requiring nursing cares daily) to 1 (relatively independent)  
**Barthel Index:** A measure of physical function, with a maximum of 20 points, indicating optimal performance in a selection of ADL measures

The Support Needs Level (SNL) was recorded from the resident’s case file by the research nurse. A total of 66 percent of participating residents showed an overall
predominance of SNL 3. Twenty percent of all participants had a recorded SNL 4 (30%) implying moderate dependence, while 13% had a documented SNL of 2. Older people with an SNL 4 require assistance with showering and dressing, and require one person to assist with transfers from bed to chair and from sitting to standing. The distribution between groups was less even. Sixty eight percent of participants in the control group and 63% in the intervention group had a documented SNL3. A higher proportion of the intervention group (25%) compared to the control group (16%) had a documented SNL 4, suggesting they were a frailer and more dependent group at baseline.

The Abbreviated Mental Test Status (AMTS) was used to measure the cognitive status of residents enrolled in the trial. The maximum score of the AMTS, 10, equates to good cognition; less than 6 indicates some cognitive impairment (Hodkinson, 1972). The overall cognitive state of residents in this trial was good. Seventy five percent of residents measured greater than 6 on the AMTS, the overall mean AMTS of residents was 7.00 (SD 2.8), and scores were equally distributed between intervention and control groups.

All medication taken by the resident, as recorded in their medication chart, was recorded by the research nurse. Medications were coded by major class and medication total refers to the number of medications taken per day, rather than the number of tablets. The overall mean of prescribed medications was 4.85. There was little variance between groups: the control participants took on average 4.77 medications, the intervention group 4.93. Of note three participants were on no prescribed medications, one from the control group and two from the intervention group. The most commonly prescribed drugs were cardiovascular drugs, diuretics/potassium, and laxatives/antacids. Pain medications such as non steroidal anti-inflammatory medications, paracetamol and antidepressants were also commonly used by residents.

Table 10 also provides information on residents’ functional ability at baseline using the Barthel Index. The higher the score the better overall function. The mean was 17.68 (SD 2.4) overall. The distribution between groups was similar; the intervention
The medical diagnoses of residents were gathered from residents’ case notes by the research nurse. The medical condition profile of residents at baseline clearly shows a high level of chronic disease. Seventy five percent of residents had a recorded diagnosis of cardiovascular disease and arthritis. Sensory impairment, respiratory disease, depression and cognitive impairment were noted to a lesser extent. The average number of diagnoses recorded for each resident was 3.7. Ten percent of residents had a listed number of co morbidities of six while several residents recorded only one condition. Figure 4 shows the medical diagnoses of residents in the trial.

![Figure 6-4: Baseline characteristics of residents’ medical history]

### 6.4 Physical performance

Two timed performance-based measures were used to assess the functional limitations of frail older people.
Timed Up and Go (TUG)
In order to explain the impact of the PILS intervention a baseline measure of mobility was sought using the timed up and go. The results for walking six metres beginning from a sitting position showed little difference between groups, with the control group TUG mean 27.7 seconds and the intervention group TUG 28.44 seconds.

Elderly Mobility Scale (EMS)
Overall the residents at baseline were a moderately mobile group with a mean EMS of 15.78. There was little difference between the mean of the control group (16.4) and the intervention group (15.1). Sixty one (40.9%) participants were able to perform a functional reach over 16cm; 44 (29.5%) had a functional reach of between 8-16cms, were able to reach under 8cm, or were Unable to complete the task.

In summary, the intervention and control groups appeared to have equivalent demographic and health characteristics at baseline.

6.5 Adherence to the intervention
Adherence to the intervention was variable. A compliance record sheet was developed to record the number of prescribed exercise sessions completed by residents, but this was poorly maintained by staff in the participating facilities. There was no systematic process acceptable to staff, despite suggesting different ways to improve access to the compliance sheets such as leaving them in the resident’s room, at the end of the corridor of the participating wing, or in the nurse’s office. The main reasons cited for this non compliance were heavy workloads and lack of time.

Although the researcher consistently tried to encourage and motivate the prescribed exercise programme with individual residents and staff there was great difficulty achieving recording compliance. Residents reported completing their exercise programme once a day rather than the twice as prescribed. An in-depth analysis of reasons for poor adherence is described in Chapter 7 and 8.
The efficacy of blinding was confirmed at the end of follow up by asking the blinded assessor to guess each resident’s treatment allocation. Correct guesses occurred in less than 28% indicating adequate blinding.

6.6 Effect of the intervention on primary outcomes

The main outcomes were compared between the control and intervention groups to establish the impact of the intervention.

Mobility, health status and life satisfaction
The results of the primary outcomes are presented in Table 11 and show the difference in P-value between intervention and control groups over time.

Physical performance outcomes
There was no evidence of an effect of the repetitive activity programme on observed mobility with the physical performance measures Timed Up and Go and Elderly Mobility Scale between groups over time (Table 11). The TUG ranged from 9 seconds to 120 seconds, the higher score meaning lesser mobility. There was no difference in change over time in either the intervention or control group (p=0.85). There was also no significant effect on the EMS, with residents’ scores ranging from 1 to 20, the higher score indicating greater mobility. There was no difference in change over time in either group (p=0.31).

In summary, exercises to improve strength, balance and endurance were tested in the trial. However, the intensity may not have been sufficient to result in a measurable change in physical performance outcomes. In addition the mobility measures may not have been sensitive enough to show small but important changes to physical function. Further trials would benefit from using physical performance outcomes that accurately reflect and are sensitive to change in status of the frail older population.
Table 6-11: Comparison of outcome measures of resident’s enrolled in PILS

<table>
<thead>
<tr>
<th>Group</th>
<th>Baseline Mean (SE)</th>
<th>3 months Mean (SE)</th>
<th>6 months Mean (SE)</th>
<th>P value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>TUG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>29.9(2.3)</td>
<td>28.4(2.4)</td>
<td>29.8(2.4)</td>
<td>0.85</td>
</tr>
<tr>
<td>Intervention</td>
<td>29.2(2.4)</td>
<td>27.8(2.4)</td>
<td>30.2(2.4)</td>
<td></td>
</tr>
<tr>
<td>EMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>16.2(0.4)</td>
<td>15.8(0.4)</td>
<td>15.8(0.5)</td>
<td>0.31</td>
</tr>
<tr>
<td>Intervention</td>
<td>15.4(0.4)</td>
<td>15.6(0.4)</td>
<td>15.1(0.5)</td>
<td></td>
</tr>
<tr>
<td>LSI-Z</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>13.9(0.7)</td>
<td>14.0(0.7)</td>
<td>14.3(0.7)</td>
<td>0.99</td>
</tr>
<tr>
<td>Intervention</td>
<td>15.3(0.7)</td>
<td>15.3(0.7)</td>
<td>15.7(0.7)</td>
<td></td>
</tr>
<tr>
<td>SF36 PCS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>40.3(1.2)</td>
<td>38.8(1.28)</td>
<td>39.1(1.3)</td>
<td>0.022</td>
</tr>
<tr>
<td>Intervention</td>
<td>40.1(1.24)</td>
<td>41.4(1.3)</td>
<td>39.3(1.3)</td>
<td></td>
</tr>
<tr>
<td>pfts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>40.8 (2.9)</td>
<td>39.5 (3.0)</td>
<td>41.3 (3.2)</td>
<td>0.17</td>
</tr>
<tr>
<td>Intervention</td>
<td>43.1 (3.0)</td>
<td>45.3 (3.0)</td>
<td>41.6 (3.1)</td>
<td></td>
</tr>
<tr>
<td>rpts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>73.3 (4.7)</td>
<td>67.3 (4.9)</td>
<td>72.2 (5.2)</td>
<td>0.14</td>
</tr>
<tr>
<td>Intervention</td>
<td>73.4 (4.8)</td>
<td>76.3 (4.9)</td>
<td>67.7 (5.1)</td>
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<td>bpts</td>
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</tr>
<tr>
<td>Control</td>
<td>76.4 (3.7)</td>
<td>71.8 (3.8)</td>
<td>74.7 (4.0)</td>
<td>0.16</td>
</tr>
<tr>
<td>Intervention</td>
<td>73.1 (3.8)</td>
<td>75.3 (3.9)</td>
<td>72.9 (3.9)</td>
<td></td>
</tr>
<tr>
<td>gfts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>61.7 (3.0)</td>
<td>60.2 (3.1)</td>
<td>67.1 (3.1)</td>
<td>0.24</td>
</tr>
<tr>
<td>Intervention</td>
<td>67.0 (3.0)</td>
<td>69.1 (3.1)</td>
<td>66.3 (3.1)</td>
<td></td>
</tr>
<tr>
<td>SF36 MHCS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>53.7(1.4)</td>
<td>53.0(1.4)</td>
<td>55.3(1.5)</td>
<td>0.52</td>
</tr>
<tr>
<td>Intervention</td>
<td>54.9(1.4)</td>
<td>55.0(1.4)</td>
<td>55.5(1.4)</td>
<td></td>
</tr>
<tr>
<td>vts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>51.4 (3.0)</td>
<td>50.1 (3.1)</td>
<td>51.8 (3.2)</td>
<td>0.27</td>
</tr>
<tr>
<td>Intervention</td>
<td>51.4 (3.0)</td>
<td>54.3 (3.1)</td>
<td>51.6 (3.2)</td>
<td></td>
</tr>
<tr>
<td>sfts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>87.3 (3.0)</td>
<td>84.4 (3.1)</td>
<td>86.8 (3.3)</td>
<td>0.29</td>
</tr>
<tr>
<td>Intervention</td>
<td>85.8 (3.1)</td>
<td>89.1 (3.1)</td>
<td>90.7 (3.1)</td>
<td></td>
</tr>
<tr>
<td>rcts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>78.8 (4.4)</td>
<td>80.9 (4.6)</td>
<td>88.4 (4.4)</td>
<td>0.25</td>
</tr>
<tr>
<td>Intervention</td>
<td>84.4 (4.4)</td>
<td>82.9 (4.5)</td>
<td>82.0 (4.6)</td>
<td></td>
</tr>
<tr>
<td>mhts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>74.2 (2.6)</td>
<td>71.0 (2.7)</td>
<td>75.7 (2.8)</td>
<td>0.27</td>
</tr>
<tr>
<td>Intervention</td>
<td>77.1 (2.6)</td>
<td>77.1 (2.7)</td>
<td>76.9 (2.7)</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
Health status

The health-related quality of life of the participants was assessed with the SF-36. The positive effect of the repetitive activity programme was shown in the intervention group on repeated measures analysis in the Physical Component Summary Score (p=0.022) at three months compared with the control group as shown in Figure 5. This difference was not sustained at six months. There was also a possible trend in the domains of physical function pfts (p=0.17), role rpts (p=0.14) and general health gh (p=0.24) towards improvement in the intervention group.

This may suggest that to some extent the intervention group experienced an improvement in previously self reported health limitations in physical activities that included self cares. As this intervention was developed around exercises incorporating activities of daily living residents may have experienced some change.
Providing a sense of purpose with the goal setting activity may also have influenced the role functioning domain (rpts). By improving their physical activity participants were able to accomplish more than prior to taking part in the physical activity intervention. The control group, however, appeared to increase scores in most categories between three months and six months follow up, thereby lessening the observable difference between groups. While the reason for this is unknown it is possible that this group may have become involved in the intervention to some degree.

Pain as assessed by the bodily pain domain of the SF 36 and the self reported likert scale did not differ significantly between the control and intervention groups. However there was a trend towards improvement overall (bpts p=0.16). Residents in the intervention group may have had a reduced effect of pain on their normal activity because of increased physical activity provided as a component of the intervention.

There was no evidence of a positive effect from the intervention on the Mental Health Component Summary score or related domains. The mean MHCS of the intervention group was 55 (SE 1.4) at three months compared to 53 (SE 1.4) in the control group. At six months there continued to be no evidence of effect, as the mean MHCS of the intervention group was 55 (SE 1.4) while the mean MHCS for the control group was 55.3 (SE 1.5) as shown on Figure 6. On the vitality score (vts) both groups scored much lower than the other Mental Health domains. It is interest to note that the scores in either group did not improve over time.
Examining the individual rest homes and the level of change over time, it is obvious that there is considerable variability in the amount of change in each home (Figure 6-5 and 6-6) with rest home 4 showing the most improvement in physical health related quality of life. Changes in mental health related quality of life are less evident.
Life Satisfaction (LSI-Z)

The participants in the trial were somewhat satisfied with life. The overall mean was 14.62, on a scale with a maximum of 20. The mean score for the intervention group was slightly higher at 15.38, while the control group mean was 13.89. The range was between 5 and 26, with higher scores indicating greater satisfaction with life. The control group rated one point higher at three months, but at six months there was no evidence of effect (p=0.099). There were no differential changes observed in the life satisfaction measure between groups over time (Table 6-11).

Association between residents’ demographic variables and self reported health and life satisfaction were examined using a linear mixed model with an autoregressive
correlation structure adjusting for clustering effect. Life satisfaction and self reported health status of the residents were not associated with demographic variables.

Residents’ self reported health status outcome differential change in the Physical Component Subscale was \( p = 0.022 \) overall and \( p = 0.021 \) for change at three months. Residents’ life satisfaction difference in change over time was \( p = 0.99 \) overall and \( p = 0.92 \) at three months.

### 6.7 Effects of the intervention on secondary outcomes

All secondary outcomes were analysed using repeated measures analysis by a mixed model with time as the repeated measure. Results of the secondary outcomes include fear of falling and health related quality of life (HQoL).

**Fear of falling**
The influences and inter relationship between fear of falling and dependency to complete activities of daily living are illustrated in Figure 6-7, with increased fear tending to be associated with a lower level of function. Other studies have shown this relationship between fear of falling and reduced activities of daily living and impact on older people in residential care compared to community dwelling older people (Tinetti & Powell, 1993).
There was little difference between the intervention and control groups in self reported fear of falling over time.
Table 6-12. Baseline self rated fear of falling measure of participants

<table>
<thead>
<tr>
<th>Scale questions</th>
<th>Intervention N=73, N (%)</th>
<th>Control N=76, N (%)</th>
<th>Total N=149, N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afraid of Falling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not at all</td>
<td>29 (40%)</td>
<td>32 (42%)</td>
<td>61 (41%)</td>
</tr>
<tr>
<td>Somewhat afraid</td>
<td>40 (55%)</td>
<td>37 (49%)</td>
<td>77 (52%)</td>
</tr>
<tr>
<td>Fairly afraid</td>
<td>3 (4%)</td>
<td>3 (3%)</td>
<td>6 (4%)</td>
</tr>
<tr>
<td>Very afraid</td>
<td>1 (1%)</td>
<td>4 (5%)</td>
<td>5 (3%)</td>
</tr>
<tr>
<td>Fear of Falling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>35 (47%)</td>
<td>39 (51%)</td>
<td>74 (50%)</td>
</tr>
<tr>
<td>No</td>
<td>38 (52%)</td>
<td>32 (42%)</td>
<td>70 (47%)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0 (0%)</td>
<td>5 (7%)</td>
<td>5 (3%)</td>
</tr>
</tbody>
</table>

The first question seeks to identify individuals’ perception of being afraid of falling. Overall 41% of residents said they weren’t afraid at all, while 52% stated they were somewhat afraid and 7.4% stated they were fairly afraid or very afraid.

The second response in the simplified self report measure to establish whether experiencing fear of falling influenced the resident to reduce activities usually undertaken regularly. Fifty percent of participants stated that they had reduced activities, 47.0% stated this was not the case, and 3% did not know or could not recall as shown in Table 12. Most participants who volunteered avoidance activities due to being afraid of falling reported limiting or stopping mobility activities, such as walking inside and outside the facility. Limiting social activities and to a lesser extent activities of daily living were cited as being avoided due to the fear of falling. Limitation of social activities tended to be those external to the facility, such as lawn bowls and going on outings.

There was no effect of the repetitive activity programme on fear of falling, as shown in Table 6-13. There is no evidence that the changes over time are different for the intervention or control group. The differential change over time overall for being afraid of falling was \( p=0.82 \) and overall fear of a falling was \( p=0.98 \). There was an observed change over time but it was similar in both groups.
Table 6-13. Fear of falling at baseline and six months after completing the PILS

<table>
<thead>
<tr>
<th>Scales</th>
<th>Group</th>
<th>Baseline Mean (SE)</th>
<th>3 months Mean (SE)</th>
<th>6 months Mean (SE)</th>
<th>P value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afraid of falling</td>
<td>Control</td>
<td>1.68 (0.10)</td>
<td>1.42 (0.10)</td>
<td>1.40 (0.10)</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>1.62 (0.10)</td>
<td>1.31 (0.10)</td>
<td>1.40 (0.10)</td>
<td></td>
</tr>
<tr>
<td>Fear of Falling</td>
<td>Control</td>
<td>1.54 (0.08)</td>
<td>1.24 (0.08)</td>
<td>1.32 (0.08)</td>
<td>0.98</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>1.51 (0.08)</td>
<td>1.19 (0.08)</td>
<td>1.27 (0.08)</td>
<td></td>
</tr>
</tbody>
</table>

Note. * for difference between intervention and control in change over time

Health related quality of life

The EuroQol is a health related quality of life measure consisting of five single-item dimensions covering mobility, self-care, usual activities, pain/discomfort and anxiety depression, each with a three point response scale (The EuroQol Group, 1990). The residents were asked to rate how good or bad their health is today with zero being the worst imaginable health and 10 being the best, using a visual aid rather like a thermometer. Residents enrolled in the PILS showed little difference between groups in the EuroQol with a mean score of 9.54 for the intervention group and 9.17 for the control group at baseline. Clearly both groups rated their health very highly. The residents were asked to self report the level of the problem that applied to them in relation to self cares, assistance required and mobility. The item response choices were “I have no problems with”, “I have some problems with”, “I am unable to/I am extremely”. Change in rating in residents self reported quality of life over time was evaluated using a linear mixed model with time as a repeated measure and an auto-regression correlation structure. There was very little difference in groups at baseline in self rated health related quality of life using the visual aid analogue (VAS): the intervention group mean was 6.58 (SE 0.38) and the control group 6.13 (SE 0.37). Health related quality of life of the residents was not related to demographic variables. Although there were changes over time for the intervention and control groups, they both showed a decline (Table 6-14).
### Table 6-14: EuroQol and VAS scores for participants

<table>
<thead>
<tr>
<th>Scales</th>
<th>Group</th>
<th>Baseline Mean (SE)</th>
<th>3 months Mean (SE)</th>
<th>6 months Mean (SE)</th>
<th>P value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQOL</td>
<td>Control</td>
<td>9.54 (0.41)</td>
<td>8.41 (0.41)</td>
<td>7.98 (0.41)</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>9.17 (0.42)</td>
<td>8.17 (0.42)</td>
<td>7.98 (0.41)</td>
<td></td>
</tr>
<tr>
<td>VAS</td>
<td>Control</td>
<td>6.13 (0.37)</td>
<td>5.92 (0.37)</td>
<td>5.65 (0.38)</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>6.58 (0.38)</td>
<td>6.27 (0.38)</td>
<td>5.84 (0.38)</td>
<td></td>
</tr>
</tbody>
</table>

* for difference between intervention and control in change over time

**EQO** EuroQol (EQ-5D)

**VAS** Visual analogue scale

### Adverse events

Adverse events were self reported lower leg, shoulder or back pain and fatigue. There was no difference in the frequency of self reported leg pain between the intervention and control groups at any point of the study as recorded on the monthly Likert scale of pain by a blinded assessor. Most reported events were mild episodes of leg pain that resulted in several days of reduced physical activity. The Likert scale of fatigue used over the six month trial period showed that 31% of the intervention group self reported some form of fatigue while 43% in the control group experienced some degree of fatigue (p=0.182). There was no evidence of an effect of the intervention on falls. No serious falls related injuries were reported during the six month intervention period. The proportion of people who fell over the six month follow up period was 42% of the intervention group compared to 57% of the control group.

### Goal setting outcomes

Goal setting was an integral part of the intervention. All seventy three residents enrolled in the intervention set a goal which was realistic to both residents and staff; goal setting is discussed in Chapter 2, Chapter 7 and 8. Subsequent to the goal setting process an individualized functional care plan was developed which prescribed individualized repetitive activities of daily living, to enable goal achievement. The research nurse trained the rest homes’ caregivers to read the functional care plans.
Goals were categorised into three distinct domains: independence in daily living activities, social interaction, and leisure activities. Examples of residents’ goals for day to day functionality include walk to the toilet or craft room (28 residents); for social functionality, visit a relative, do gardening (32 residents); and for leisure functionality, play snooker, walk to the mall (13 residents). Day to day function goals were mostly sited in (11) and around (15) the rest home with two in the community. Social functionality goals were usually sited in the community or different town (22) with the minority being in (six) or around (four) the rest home. Leisure functionality goals were split between the community (nine) and inside the rest home (four). Table 15 shows the diversity of goals set by residents.

Goals relating to staying in touch with the community and participating in community activities were of most importance to the residents. Interestingly eight of the residents across the five rest homes wanted to be able to continue or resume going out in the van on organised trips. Getting in and out of the van can become a difficult task for older people with medical conditions such osteoarthritis of knees or shoulders, as getting into a van involves a stepping and pulling up action which requires good upper and lower body strength. Fourteen of the residents wanted to continue walking in the gardens of the facility. Several of the residents enrolled in the intervention had fallen and sustained fractures of the femur in the last year and had subsequently become fearful of walking outside independently. The rest of the residents had lost confidence in venturing outside. For the more frail residents, walking around the rest home independently or getting to the toilet in time were considered important goals to achieve. (Refer to Appendix 10 itemised residents goals).
Table 6-15: Summary of residents’ goals presented in three domains and locations

<table>
<thead>
<tr>
<th>Domain</th>
<th>Within Facility</th>
<th>Within Grounds of Facility</th>
<th>In Community (including different town locations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independence day to day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>functioning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>walk to toilet, shower, walk</td>
<td>11</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>to dining room, walk to craft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>room, walk outside</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social functionality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>visit relative in various</td>
<td>6</td>
<td>4</td>
<td>22</td>
</tr>
<tr>
<td>settings, attend opera, play</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>piano, gardening, outings in</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>van, attend church service,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dine out</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leisure functionality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>play snooker, shopping, walk</td>
<td>4</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>to mall, attend computer class,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dancing, senior citizens’ club</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6-16: Number of residents who achieved goals on completion of PILS

<table>
<thead>
<tr>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals obtained</td>
<td>59</td>
</tr>
<tr>
<td>Goals not obtained</td>
<td>14</td>
</tr>
</tbody>
</table>

Goal attainment

All participants enrolled in the intervention group were able to set a functionally focused goal. Eighty one percent of participants achieved their goal during the six month intervention period (see Table 6-16). A total of 19 percent were still on the way to achieving their goal at the end of the six month period. These tended to be residents who were more frail and dependent.

The intervention process

As research staff supported the intervention groups implementing the intervention, the research team noted that several rest home wide activities were starting up. This included a walking group who regularly walked inside and outside the home, and
groups of residents doing their activities together in the lounge. Staff also noted that some of the control group residents were also participating in these ad hoc activities which sprang up during the intervention period. As such there was evidence of contamination of control group participants in this trial; this was more evident towards the end of the intervention period.

6.8 Discussion

The effects of an individualised, repetitive activities of daily living exercise programme on residents in rest home facilities was the focus of this thesis. This study suggests that such a programme may have improved self rated health status for residents at least in the short term. The effects of such an intervention are clinically important when considering that many older people in residential care ‘hover’ close to a ‘dependency threshold’. Increasing the functional reserve of older people is extremely important and this intervention may be one feasible way to achieve this.

The intervention was tested to evaluate the impact on residents’ health, physical function and health related quality of life. Baseline characteristics of the sample of residents enrolled in this study was similar in demographic characteristics to general populations currently in residential care. The sample was randomised and the intervention was delivered and outcomes evaluated at an individual level. To avoid difficulties with analysis appropriate regression techniques were used and rest homes were included as a factor to adjust for clustering. Unfortunately, this study did not show a sustained improvement in self reported health status beyond three months. The apparent contamination of control group participants in this trial may have lessened the effect over time.

6.8.1 The sample enrolled

The study enrolled in this trial had an intermediate level of dependence. The interpretation of the Support Need Level at an individual level was an essential component of the underlying assessment process for those older people enrolled in the PILS intervention, as it provided information about the residents’ current functional ability. Just under a twenty percent the residents enrolled in this trial recorded an SNL 4, indicating relatively high needs, such as requiring assistance for
most activities of daily living including bed to chair and chair to standing transfers. The relationship between the number of residents with SNL 4 and the high percentage of participating residents with a cardiovascular (stroke) and/or arthritis diagnosis may be relevant. Previous randomised controlled trials have found inconsistent effects of physical training on physical performance in institutionalised older people. There is some evidence to support physical training having a positive impact on muscle strength, aerobic capacity, balance and flexibility (Lazowski et al., 1999; Morris et al., 1999; Rydwik et al., 2004).

Medication use
Medication usage by older people in residential care facilities has been under researched in the New Zealand context. Medication use in this study is comparable to other international studies exploring medication usage in long term care facilities (Lapane & Hughes, 2002). Sloane, Zimmerman, Brown, Ives and Walsh (2002) showed older people in low level care facilities (similar to the rest home in this study) were prescribed a mean 5.6 medications. International variability exists with respect to the number of medications and other factors influencing suboptimal pharmacotherapy for older people in long term care facilities (Lapane & Hughes, 2002). Yip and Cumming (1994) found a high prevalence of older people in residential care taking medication; in their study just over 62% of the residents were taking four or more medications.

Over half of the participants in PILS consumed six or more medications, which raises concerns when there is a significant association between the number of drugs taken and the rate of falling Polypharmacy coupled with age related changes in the pharmacokinetics and pharmacodynamics of drugs places the older person at greater risk at all levels, including adverse drug reactions (Lipsitz et al., 1997). The patterns of antidepressant medication usage by participants in PILS appears to be consistent with other long term care studies. Although depression was not measured in this study, other residential care studies have found that antidepressant prescribing is high among residents in long term care but often the rates of depression are under diagnosed and under treated (Shyam, Patterson, & Masood, 1999; M. Williams et al., 2004). Studies have also identified that older people in residential care have poor pain
management (Cowan, Fitzpatrick, Roberts, White, & Baldwin, 2003). The PILS trial included a review of current medications in the intervention group which involved optimising pain medication following a pain assessment. Arthritis was one of the common diseases of the enrolled residents. These residents commonly required pain medication review at the commencement of the intervention.

**Cognitive status**

Developing dementia has been highlighted as an increasing reason for both functional and cognitive decline in an older person who will subsequently require assistance with activities of daily living, which may lead to placement in residential. The most recent national survey found that approximately 50% of older people living in residential care self reported some difficulty remembering (Statistics New Zealand, 2001a) International studies have found comparable results to enrolled older people in the PILS study. Jagger (1997) found that 37.6% of older people were considered moderately or severely cognitively impaired. They noted a strong gradient decline for women over the age of eighty five years in residential care compared to their male counterparts in the same setting. A number of physical activity interventions exclude older people with Abbreviated Mental Test scores lower than six.

In this pilot study it was decided to include anyone that the rest home care staff felt would benefit from the repetitive activities of daily intervention, provided they had the capacity to set a goal to test the hypothesis of the trial. This was supported by the underlying assumption that having the ability to complete activities of daily living remains intact until a certain degree of cognitive deterioration has been reached. Basic activities such as bathing, eating and getting dressed remain preserved when first symptoms of cognitive deterioration occur. In contrast, complex activities of daily living are dependent on intact memory, attention and executive function. Such activities include managing finances, using public transport and the telephone.

The concept of an ADL threshold that separates mild cognitive impairment from dementia appears to be improbable for several reasons. In a cross sectional study of 45 mild cognitively impaired patients compared with 30 age matched cognitively unimpaired older people, found that impaired ADL was already present in the mildly
cognitively impaired Perneczky et al. (2006). This mildly cognitively impaired group had limitations in various situations of everyday life including tasks that required episodic memory. Would the older people enrolled in this study have the ability to retain a repetitive activities of daily living programme and would ongoing supervision by the caregivers enhance the effect?

Virtually all older people in residential care in New Zealand require assistance with one or more activities of daily living, and older people with severe disability reported three or more activity of daily living limitations (Statistics New Zealand, 2001a). Studies that have compared community dwelling older people with those in care facilities found that a significantly higher proportion of people in residential care had activity limitation, regardless of disability or impairment (Bischoff et al., 2003).

One obvious reason for the higher rate of activity limitation in institutional care is the perception that older persons in residential care require assistance with all activities of daily living. However this may be misleading as there may well be a model of care practice that reinforces “learned dependency” rather than independence. Several studies can be found that illustrate this finding (Barton, Baltes, & Orzech, 1997; Blair et al., 1996). Barton et al (1997) found residents’ dependent behaviours were supported by staff, while residents’ independent self care behaviours were ignored. A further example of this learned dependency was shown in a study exploring self care behaviour of residents. Even if residents were able to perform their own care they needed staff permission to proceed with care activities (Atwood et al., 1994).

The functional limitations of older people in residential care in this study are comparable with other studies (Formiga, Mascaro, & Pujol, 2005). Comparisons between these studies, which concern the ability to execute activities of daily living utilising the Barthel Index measure, established significant differences by gender and residential status. Overall community dwelling women reported requiring more help with shopping, transportation, bathing, climbing stairs, and bladder and bowel control. Women over the age of 85 years in residential care reported more difficulty
in all items except eating and grooming. The residents may not have reported grooming difficulties as these tasks may be undertaken by care staff within the home.

Co-morbidity has been defined as the concurrent presence of two or more medically diagnosed diseases in the same individual. Co-morbidity heightens the risk of disability (Fried, 2004). The concurrent presence of heart disease and osteoarthritis of the knee increased the relative risk of developing mobility disability to 13.6 from a relative risk of 4.4 for those with osteoarthritis alone, or 2.3 for those with heart disease alone, compared to those with neither disease (Ettinger et al., 1994).

It is probable that the older residents in this study had a higher rate of reported diseases prior to entry into residential care. International studies have shown older people with a disability that limits performing activities of daily living - in particular personal care, cognitive impairment, poor self rated health, and walking difficulty - were more likely to be in residential care placement (Wang, Mitchell, Smith, Cumming, & Leeder, 2001). Locally Weatherall (2004) found that urinary incontinence and those with mobility problems who had cognitive impairment were more likely to be placed in residential care.

Other international studies have found cerebral vascular disease, osteoarthritis; hypertension, heart failure and dementia are the most common diagnosis in this group of older people, including those in residential care (Baltes & Mayer, 1999; Jaggers, 2007). The residents in this trial had similar demographic profiling in regard to medical diagnosis. Results from this sample may therefore have reasonable representativeness for other nations with older people in residential care.

**Physical performance**

Maintaining physical activity and exercise has been strongly advocated for older people, including those in residential care (Fiatarone-Singh & Mayer, 2002). Other studies exploring physical activity in residential care have used the Elderly Mobility Scale (EMS) as an outcome (Rydwik et al., 2004). One study explored components of the EMS rather than using the scale in its entirety. The most common items to be examined in isolation were the sit to stand activity and functional reach. Functional
reach as an independent variable has been shown to be a practical marker that correlates with physical frailty even more than age. Comparisons between functional reach, which showed a broad range of 4.3 to 16.5 inches with a mean 10.9 (SD 3.1), and the 10-foot walking speed and tandem walking, showed strong correlation (Spearman correlations ranging from 0.64-0.71). Compared to international literature, the residents in PILS performed similarly.

### 6.8.2 Following the intervention

**Physical activity**

The intervention did not have an effect on physical performance in participants. There are several potential explanations for this. The intervention primarily targeted the lower limbs because of their pivotal role in functional mobility (particularly standing, transfers from bed to chair, sit to stand, and walking) which supported the overall functional goal set by participants. Firstly, it is possible that the practical design of the intervention which had regular staff delivering the programme was not adhered to. The level of supervision and transference of skills by the researcher was minimal in the last three months of the trial, as it was anticipated that the programme had been well incorporated into the daily routine of staff and residents. It is possible that this pragmatic approach provided doses of exercise to the residents that were inadequate for achieving effective gains in physical performance. This may have contributed to the slow down in improvement of the intervention group during the second three months of the trial. Staff did not always have time to assist the residents to complete their twice daily prescribed exercise programme due to heavy workloads or staff shortages. This is further explored in Chapter 8 which describes staff’s experiences of the PILS intervention.

A second possible reason for the ineffectiveness of the intervention on improved physical performance is that the exercises were not at a level of intensity that would make a significant difference. With lower intensity exercises, it is possible that a longer duration of the intervention is required to allow greater physical adaptation, with an increase in muscle strength and function and endurance, to be observed. Interventions involving older people showing the effects of exercise on falls and
disability have suggested programmes of a longer duration are more effective (Fiatarone-Singh & Mayer, 2002; Keysor & A. Jette, 2001).

The intensity of the exercises was low-moderate in PILS for a number of reasons. An estimated 30% of older people experience a significant decline in physical activity on entry to residential care (Ruuskanen & Parkatti, 1994). Participation in residential care activity programmes is more difficult because of fear, lack of motivation, depression, and poor understanding of the long term benefits of physical activity. The intervention was acceptable to the residents enrolled in PILS, as shown by the low numbers of drop outs, because it incorporated moderate intensity functional task type activity into the daily activities of residents. Recent randomised control trials have found inconsistent effects of physical training on physical performance in institutionalised older people (Forster et al., 2008). These studies have aimed at improving mobility and safe transfer and have presented effects across a range of mobility capacities.

One programme of moderate intensity found positive effect Schnelle, MacRae et al. (1995) whereas a programme of lower intensity did not Morris (1999). Positive effects on endurance have been shown in studies Brill et al., 1998; Fiatorone et al., 1994; McMurdo & Rennie, 1993) as well as negative effects Naso et al., 1990. Of two interventions that aimed to improve balance only one was successful; however the data did not provide the level of demand regarding the balance exercises (Au-Yeung et al., 2002). A more successful trial involved an exercise intervention in cognitively impaired older people; they achieved positive effects on strength, balance and mobility when the programme was delivered by recreational staff and aides (Lazowski et al., 1999).

Including recreational staff in PILS was not part of the intervention protocol. Several homes in the trial did co-opt recreational staff to assist, particularly when the rest homes were short staffed. As these activity staff had no formal training in the PILS protocol a variation in the protocol may have occurred during these times.
Health status
The intervention did have an effect on self reported health status, but did not show a sustained improvement beyond three months. The clinical relevance of this change in the short term is uncertain, but this finding could be interpreted as residents who participated in the exercise programme perceiving an improvement in their health. Self ratings of health represent human judgements that can be interpreted as monitors of decline in health and functioning as well as current health status (Cress et al., 1995).

There was evidence of contamination of the control group participants in several of the rest homes. Control group participants were observed taking part in walking groups and exercise classes with the intervention group participants. This may have significantly influenced the level of function and well being, thereby lessening the chance of observing an intervention effect. Both physical and mental health summary scores of the SF-36 tended to improve in the control group in the second three months of the trial. If contamination has occurred it may have obscured a potentially larger improvement than that observed.

Heath status seems to be a co variant. If respondents rated their health status as good as a vast majority did, they still saw their well being as satisfactory after the intervention. One could argue that health may be a determinant of well being, but that its effects are mediated, which in turn modifies rather than negates the perception of overall satisfaction.

Life satisfaction and health related quality of life
Exercise may affect quality of life by influencing the two predominant components of health related quality of life: physical functioning and well being (Stewart & King, 1991). A number of descriptive and experimental studies have tried to show an association between exercise and quality of life. In a sample of 143 nursing home residents Rususkanen and Parkatti (1994) found a positive association between meaningfulness of life (obtained by asking residents one question rating their life at the moment of interview) and physical activity. Of the total sample 60% of residents
who participated in some kind of physical activity had a positive relationship between physical activity or exercise and quality of life.

In contrast, another study conducted in residential care that measured affect, pain and physical functioning as quality of life parameters, found no significant changes in these outcomes following an exercise intervention (McRae et al., 1996). A low intensity seven month exercise programme, using twice weekly seated exercise that included leg and arm strengthening exercise, produced modest improvements in function but no effect on life satisfaction (McMurdo & Rennie, 1993). Many of the studies reviewed were of poor quality, small sample size and used outcome measures that were not well validated. The duration of the studies was typically shorter than nine months. The PILS intervention had a follow up period of six months, which may not have been of sufficient length to show an accumulated effect on quality of life.

Negative wellbeing has been reported as a key finding in a study exploring people’s perspectives of living in care facilities in the United Kingdom (Lawton et al., 1999). These findings are supported by a number of other quality of life studies which found in general, participants living in institutions reported less frequent experience of positive affect compared with participants living in private households (Kane, 2001). The participants in PILS reported similar feelings of low subjective well being with the overall mean of 14.62 in the Life Satisfaction Index and the control group mean of 13.89 (slightly lower than the intervention group, as previously noted).

Clearly well-being must acknowledge events and circumstances in the context of the lives in which they are experienced; this would seem critical when exploring life satisfaction for those older people living in institutions. The field of ‘subjective well-being’ has been examined extensively (Diener & Lucas, 2000). Subjective well being has been posited as a construct that encompasses personality, goals, culture and other contextual factors which can change the meaning of events for people. This would be of particular relevance for a group of older people no longer living in the community but conforming to the rules and regulations of institutional care, such as those older people enrolled in PILS.
Some have argued that measures of subjective well-being also ascertain feelings of success in achieving life’s goals and generally pertain to the subject’s past, present and future outlook on life. It is unclear if measures of life satisfaction can be separated from happiness. This may have an overall bearing on the results of this study as happiness fluctuates on a daily basis commonly known as a ‘transitory mood of gaiety and elation’ (Fowler & Christakis, 2008). The degree of happiness older frail residents experience may have less influence on overall quality of life, which may be favourable or unfavourable. As quality of life for a number of residents is determined almost wholly within the rest home facility, being one’s self and feeling positive about it enables them to express themselves. As the group of older people in this study presented with low life satisfaction the questions might be posed: Will this have an overall impact on both the goal setting activity and motivation to act upon the goal? Is this one of the reasons that the results of this trial are not more positive?

**Fear of falling**

The definition of fear of falling is “low perceived self-efficacy at avoiding falls during essential, non hazardous activities of daily living activities” (Tinetti et al., 1990). The independent predictors of falls efficacy in community dwelling older people include usual walking pace, anxiety, and depression. Predictors of falls efficacy in residential care appear more complex, including the variables walking, anxiety and depression but also variables of the facility environment such as wheelchair maintenance, long corridors, and lighting (Kiely, Kiel, Burrows, & Lipstiz, 1998).

Risk of falls and fear of falling commonly leads to reduced mobility which in turn reduces physical capacity and increases functional dependence in daily life (Rubenstein, Joesphson, & Robbins, 1994; Tinetti et al., 1988). There are significant consequences for older adults who fall or who fear falling which have emotional as well as physical costs. Older people in residential care facilities have been shown to have fall rates three times higher than those living in their own homes. Evidence suggests that the fear of falling may be more catastrophic than a fall (Hill et al., 1996; Tinetti et al., 1990).
The Fear of Falling scale used in this trial was a self report measure which simply asked participants whether or not they were afraid of or fearing a fall. Results suggest that individual perception of capabilities within a particular domain of activities (in this instance the degree of confidence) is about the cognitive process that underlies emotion. In this trial fear of falling was unchanged by the intervention. Interestingly few falls prevention studies in residential care have measured fear of falling as an outcome (Norwalk, Prendergast, Bayles, D'Mico, & Colvin, 2001).

The types of activities participants reported avoiding as a result of fear of falling were mostly outdoor activities. It is possible that less fear around activities of daily living might be indicative of common care practices in residential care facilities in which caregivers assist residents with activities such as showering and dressing, regardless of the residents’ functional ability. A study which examined fear related activity avoidance provided similar results to this trial and hypothesised that by avoiding activities this may in fact have long reaching negative effects on physical abilities and be predictive for falls (Delbaere, Crombez, Vanderstraeten, Willems, & Cambier, 2004). This is further supported in other studies where avoidance of fear activities relates not only to general physical frailty status but to specific components of physical function, including decreased muscle strength, hand grip strength and balance (Kiely et al., 1998; Tinetti et al., 1990).

The incongruity between physical ability and functioning frequently seen in frail older people may have been a contributing factor to the lack of effect on fear of falling in this trial. One of the few studies measuring fear of falling in residential care used a pre-post test to evaluate a supervised exercise programme, including a 10 minute walk outside the facility three times a week. The study did not show improvement in fall related outcomes or falls efficacy (Kiely et al., 1998; Tinetti et al., 1990). However the sample size was small so it is possible that the effect may not have been able to be detected. Suggestions have been made that it may be difficult to affect fear of falling when an exercise programme does not include a psychosocial approach. Self efficacy as a psychosocial construct was linked to both the notion of reducing fear of falling and self regulatory processes in the goal attainment process. Despite this, the current trial showed no effect on fear of falling.
The use of the Falls Efficacy Scale may have been reliable in showing a positive outcome as it is designed to assess the degree of perceived self-confidence at avoiding a fall during non-hazardous activities of daily living. Schoenfelder’s study (2000) showed a modest effect on the Falls Efficacy Scale following a six-month exercise programme. However, this study excluded residents on the grounds of inability to walk independently or those who had a low score on the Mini Mental Status Score (MSQ).

**Goal setting activity**

To our knowledge, this is one of very few studies that use functional ‘goal’ driven task activities, proven in community dwelling older people to improve physical function in residential care (de Vreede et al., 2004). The goal setting activity was an integral part and a novel component of encouraging older people to increase their overall physical activity. The PILS intervention demonstrated that residents can engage in such an activity and many were able to attain their goal. Those residents who were still striving to achieve their goal at six months may have had varied ability to participate in the goal achievement process, related to their levels of pain, illness and energy. The residents’ experiences, as described in Chapter 7, also related the inability to reach their goal to staff’s inability to assist the more frail older person in their daily exercise programme. This may have limited the length of interaction that these residents could manage.

Successful interventions involving goal setting and physical exercise programmes involving older people have mainly been conducted in community settings (Jackson, Carlson, Mandel, Zemke, & Clark, 1998; Stenstrom, 1994). The outcomes from these studies showed improved activity and decreased pain. The effect of a 12-week home-based exercise programme combined with goal setting for 42 older people with a diagnosis of rheumatoid arthritis, found that the goal setting was important and a statistically significant component of the intervention. Furthermore, those in the intervention group increased their exercise dose while those in the attention group did not (Stenstrom, 1994). Similar results were found in a trial to increase exercise in community dwelling older people with heart failure. Although the sample size was
small, the goal setting physical activity intervention showed an effect on exercise adherence (Duncan & Pozehl, 2002).

While studies with goal setting as part of an intervention in residential care have been documented (Blair, 1999; Morris et al., 1999), the goals tended to be set by staff rather than the individual residents. Blair (1996) showed an improvement in self-care as a result of an intervention that involved mutual goal setting with or without behaviour modification. This intervention did not include a physical activity programme. In the ‘Self Care for Seniors’ quasi-experimental study, Morris included goals identified by staff, with the consent of the resident, around some functionally declined activity such as dressing, and produced an effect on ADL outcome measures (Morris et al., 1999).

Many of the goals the residents set in this study related to linking with the community, either in maintaining networks or recommencing a community social activity. It is possible that the residents in PILS, having strived to reach the goal by increasing their physical activity, were constrained by the ability of facilities to maintain transportation to attend these. Goals that were centred in the immediate facility may have been sustainable in the longer term.

### 6.8.3 Study Issues

**Random error**

Two types of errors influence the results from randomised controlled studies: random and systematic error (Donner & Klar, 2000). Well developed study design in randomised controlled studies will endeavour to eliminate random error although these errors cannot be eliminated completely; unexplainable fluctuations in data, commonly known as random error, occurs in all studies (L. Friedman et al., 1998). Random error in randomised control trials often results from sampling error. An effective way increase the precision of a randomised controlled study is to increase the sample size. The sample size needed for a particular experiment or survey depends on the statistical power of the test, the effect size that it is required to detect, and the desired level of significance (Altman, 1991).
In statistical testing, the significance level is the probability of rejecting the null hypothesis when it holds in the population (Altman, 1991). PILS had sufficient power to detect an effect in the key outcomes. The power calculations were based on the ability to detect a clinically relevant change of three in the physical component summary score of the SF-36. 67 in each group that is the intervention and control groups. PILS was designed to have 90% power (0.05 alpha) adjusted for the effect of a clustered sample, using an estimated intra-class correlation of 0.01 for the Physical Component Summary score. This sample size resulted in 96% power to detect changes in the Elderly Mobility Scale and 95% power to detect a change in the LSIZ had this actually occurred.

Other steps were taken to reduce random error and increase precision of the treatment effect. Standardized outcome measures that had established reliability were used and a study protocol with specific guidelines was produced for the research staff to follow (Matthews, 2000).

**Biases**

Systematic errors may occur in randomised control studies that lead to a treatment effect. This is defined as a deviation from the true result that is not due to chance alone. Bias is described as any process at any stage of the study which produces results which deviate systematically from the truth. These biases can be due to the way variables are measured, selection of participants or some confounding factor that is not completely controlled for (Friedman et al., 1998).

Selection bias has been shown to be a common source of systematic error which can result in a failure of internal validity. Randomisation can avoid such errors, as participants have an equal opportunity of being assigned to each group, and group allocation is not influenced by investigators or participants (Donner & Klar, 2000). In the PILS trial a person independent of the study randomly allocated residents to the two arms of the study. Participants in the intervention and control arms had similar characteristics, therefore it is reasonable to assume that there was minimal likelihood of selection bias influencing the results, and the results can be generalized to the population.
Information bias occurs when the results of a trial are distorted by researcher knowledge of the treatment groups. Un-blinded studies exhibit an increased treatment effect compared with blinded studies (Friedman et al., 1998). The most effective way to prevent information bias is to blind the people involved so that they are unaware of the group allocation of patients. In the PILS study, blinding of the outcome assessor was used to minimise information bias. While it was not possible to blind residents to the intervention, the research nurse collecting the outcomes and adverse event information was blinded to the treatment groups. This included instructing both residents and staff not to discuss the residents’ status with the assessors, as well as removing residents’ visible intervention information from their rooms during assessment periods. The blinding of the assessors appeared to be successful since they were not able to guess the treatment group allocation.

Confounding is another source of systematic error (Rothman, 2002). The consequence of confounding is that the estimated association is not the same as the true effect. In controlled trials, the process of randomization can balance any potentially known or unknown confounding factors between the groups being compared (Donner & Klar, 2000). In the PILS trial, randomization was employed to minimize the imbalances of potential confounders and the sample size reduced the risk confounding simply because of the play of chance. Unknown confounders can always be unbalanced as they are not explicitly measured. In the current trial all known confounders were reasonably equally distributed between the groups.

Common health-care questions in which confounding by cluster should be anticipated, tested, and adjusted for are the association of access or outcome with patient ethnicity and age. In the PILS trial age, gender, functional and mental scores were included in the statistical model estimating the effect on outcome and the rest home was included as a factor to adjust for clustering. The study design for this intervention in residential care means the effect of clustering will influence results.

Reviews of randomised trials utilising cluster design have emphasised the problems of failure to use appropriate analysis techniques for cluster randomisation (Donner & Klar, 2000). The level of intraclass correlation on any particular outcome selected for
study will influence both the sample size required to establish change in that outcome variable and the confidence interval of the estimate for that variable (Simpson, Klar, & Donner, 1995). In this study, to show a clinically relevant change in the physical component score of the SF-36 was not due to chance alone, a sample size of 67 in each group (90% power, 0.05 alpha), adjusted for the design effect of a clustered sample using an estimate intra-class correlation of 0.01 for physical component score, was needed and achieved.

Contamination
Contamination of control participants observed in two of the rest homes may have reduced the point estimate of the intervention effectiveness which may have lead to a type 1 error. Epidemiological studies state that type 1 error occurs when there is an internal threat to the validity of the study (Rothman, 2002).

Intention to treat
Generally participants enrolled in a study and randomized at the beginning of the trial must be accounted for during the analysis. Intention to treat (ITT) analysis is part of the analysis plan of randomized controlled trials to ensure all participants are compared in the groups to which they were originally randomly assigned (Hollis & Campbell, 1999). Failure to account for all the participants at the conclusion of the trial will result in analysis bias, potentially overestimating the treatment effect. ITT preserves the prognostic balance in the treatment arms achieved by randomization and increases generalisability (Hollis & Campbell, 1999). In the PILS study ITT analysis was used which incorporated the results of residents who did not comply with the intervention, thus providing greater validity and relevance to the result and making it more relevant to clinical practice. In the PILS study only one patient withdrew and refused a follow-up assessment.

6.8.4 Summary
In summary, the PILS trial differed from previous studies of exercise programmes in older people in residential care in several ways. The intervention included increasing physical activity around the residents’ activities of daily living. The activity was driven by a goal set by the resident that was meaningful. Finally the design of the study was
different as it trained the regular workforce staff to deliver the programme rather than utilising outside exercise facilitators, which can be both costly and often prevents the ability of capacity building to occur within the facilities. These differences may explain a lack of sustained effect of the exercise programme as potentially the uptake of the programme was less than desirable. The following chapters explore the experiences of the residents and then staff who participated in the Promoting Independent Living Study.
Chapter 7: Participating in the Promoting Independent Living Programme: The residents’ perspective

7.1 Introduction

The focus of this chapter is on how the residents attributed meaning to participating in the Promoting Independent Living Study (PILS), which was designed to improve functional independence, wellbeing and quality of life. The purpose of this part of the research was to ascertain how residents defined these concepts within the context of their lived realities and in relation to their physical and social circumstances.

Using an analytical approach to explore residents’ perceptions, this endeavour will illuminate the multiple realities the participating residents experienced during the intervention. There has been a considerable amount of literature written about physical activity and older people in residential care in general over the last two decades (Fiatarone, 1995). However, seldom heard is the resident’s voice, addressed here by providing a platform for the resident to articulate what worked and what did not during the goal setting physical activity intervention, known as PILS.

The specific aims of the chapter are: first, to establish the factors which from the residents’ perspective contributed to the success and failure of the intervention for residents and staff; secondly, to explore the perceived impact of the activities of daily living intervention on the resident’s health status, both psychologically and physically; and finally to investigate factors that may contribute to the motivation of the resident and the threshold for self starters.

7.2 Background

Exercise programmes in general have been shown to have a positive influence on overall health status and quality of life in the older adult, including those in residential...
care (Singh Fiatarone, 2002). Despite evidence that resistance and strength based exercise is safe in very frail older people, prevalence rates for resistance exercise is low with only 4% of those over 75 years participating in regular programmes. Women in general report lower participation levels in strength training at 11% vs 16% in men. Singh Fiatarone (2002) argues that it is this demographic group (frail older people) who bear the highest proportion of disability and disease but has the poorest access and lowest opportunity to participate in physical activity programmes.

A lifestyle approach promoting physical activity has been suggested as a way to improve uptake and adherence (de Vreede et al., 2004; Singh Fiatarone, 2002). A systematic review completed in 2003 which aimed to identify interventions that were effective in improving independence of cognitively intact populations in residential care facilities, found only six published studies that met the inclusion criteria of independence as the main outcome measure (Evans, Goodman, & Redfern, 2003).

The evidence from this systematic review showed effectiveness of exercise programs in maintaining activities of daily living function, but sustainability of the intervention in terms of the maintenance of independence was not able to be proven due to a limited number of studies.

The PILS approach provided health professional and caregiver training and motivational techniques tailored to increase adherence to activities for residents. Several researchers advocate that training and behavioral programs must be modified to suit a particular cohort (King, 2001; Singh Fiatarone, 2002; van der Rij, Miranda, Laurant, & Wensing, 2002). The trajectory of the PILS intervention went beyond the more traditional standards for exercise prescription in order to allow the residents to make the important connection between improved function and their daily lives. The primary purpose of the intervention was to facilitate accomplishing this through individual strategies anticipated to provide greater gains in the longer term (Rejeski et al., 2005).

The following section discusses the residents’ perspectives of participating in the physical activity intervention.
7.3 The residents’ perspectives

The findings reported are based on qualitative interviews with 18 residents, a subset of those who participated in the PILS programme. Transcribed interviews were coded and sorted according to themes and categories which emerged during the data analysis process. Four discrete but overarching themes emerged. Deciding to participate in PILS; getting started; staying on track; and the benefits. The category set was revised on a number of occasions in order to include all material from the resident interviews that were discrete from the staff perspectives. This also provided a means of establishing logical levels of data categories reflective of the data set contained within the transcripts. The diagrammatic representation illustrates the steps that residents travelled while being involved with PILS.

![Diagram of resident perspectives]

**Figure 7-1: The residents’ perspective**

7.3.1 Deciding to participate in PILS

- **Deciding to Participate in PILS**
  - Getting information and the decision making process
  - Reasons for wanting to participate
  - Reasons for initial lack of interest

- **Getting Started**
  - Goal Setting
  - The prescriptive exercise plan
  - Overcoming anxieties
  - Pacing themselves

- **Staying on Track**
  - Routinising physical activity
  - Motivation to keep going
  - Adding meaning (purpose to life)
  - Helping each other
  - Taking initiative to maintain activity

- **The Benefits**
  - Improved fitness and strength
  - Improved independence in activities of daily living
  - Improved well being
  - Improved spiritual well being
  - Improved engagement with family
  - Re-evaluation of what it means to be old

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*Page 201*
The ability to engage older people in exercise programs and activities has held great interest for researchers and clinicians alike. However, engaging older people in long term residential care in exercise and activity programs has held less interest until recently. A number of studies with relatively small sample sizes have begun to appear in the international literature (Forster et al., 2008). Studies consistently present older people’s acceptance, refusals and withdrawals numerically; little is stated contextually about an individual’s perspective of engaging in such interventions, in other words ‘what’s in it for me?’ The residents’ decision to take part in the activity programme was ultimately their own, in comparison to the themes described in chapter 5 where residents lost their ability to make decisions about time to get menu selection. Unlike the participating staff whose initial commitment to the project was decided by senior management of the facility.

Getting information and the decision making process

Just as staff was given information regarding the underlying principles of PILS during the start up phase, the residents also acquired information about the intervention. During this phase, residents recalled that it was the idea of setting a goal, rather than practical application of the physical activity programme, that they wanted information about. Information was provided by the research team, and staff and residents talked about how, from this information, they began to make sense of what it all meant. The sharing of information was given in a variety of ways, dependent on the facility involved. In some facilities information was provided at the individual level, while at other facilities residents attended combined staff and resident meetings, as described by a resident who was invited to attend such a meeting:

_I was asked to come to a meeting in town with the nurse managers as I was on the resident committee, and they thought I was the best one to share what I heard with the other residents (Morp, 92, RH4)._ 

Over half the residents reported they had consulted with someone else before agreeing to take part in the intervention. Residents sought assurances about being part of a research project, and wondered if they would be capable of participating in
the physical activity programme. Residents also reported talking with staff in the facility, while still others sought guidance from a family member:

> When the nurse came and talked to me about the exercise programme I said that I would have to talk with my family when they came in next. I remember I also said to the nurse she could phone my daughter and talk to her about it. Then my daughter came in on the weekend and we talked about it some more. When I saw the nurse again I told her that my daughter thought it would be a good idea (Mavis, 92, RH5).

> I discussed it with my daughter when she called in after work and she said it was up to me to decide but that she liked the idea and it didn’t sound like a lot of effort on my part (Lucy, 86, RH2).

Several residents who did not seek advice from others reported the decision to participate arose from curiosity and intrigue:

> I wondered how you [the researcher] would go about it, how you were going to put the programme forward to everybody. Yes, I thought, I will see this girl in action (Roa, 81, RH5).

**Reasons for wanting to participate**

The residents identified several reasons for wanting to participate in the exercise programme. Residents’ commitment to enroll was predominantly driven by the desire to improve their general function and independence; less important reasons that residents stated included:

> Inquisitiveness of being part of a research project’ and getting a sense of ‘the practicalities of activating a physical activity intervention for frail older people living in a rest home (Roa, 81, RH5).

For most of the residents, the anticipated benefits to be gained from the physical activity programme outweighed the initial wariness. Improving overall physical function was reported as the main anticipated benefit with improved mobility, improved strength in their arms and functional independence as three main reasons. Interest in participating was in a context of recognizing poor mobility, a general slowing up and a loss of strength:

> I was not walking very well anymore (Morp, 92, RH4).

> Before I started on the exercise programme I had noticed I was slowing up a lot of the time (Lucy, 86, RH2).
Well I wanted to move my arms a lot better, they felt so weak and I couldn’t hold them above my head at all (Joan, 79, RH5).

The desire to maintain or improve overall independence was cited as one of the main reasons for participating in the physical activity programme for all residents:

I thought this was an opportunity to try and maintain my independence (Elsie, 89, RH3).

Lack of regular physiotherapy was a compelling reason for five residents in two of the rest homes to enroll in the study. These residents had high care needs due to chronic health conditions that included Parkinson’s disease and Multiple Sclerosis.

Reasons for initial lack of interest
Negative responses were also noted by two residents who recalled how, when first approached to participate, they felt it was not really for them, citing being too old and perceiving no benefits would be gained by participating in the exercise programme:

Well at the age of ninety I thought how ridiculous. All I want to do is to live peacefully till the time comes (Lara, 90, RH3).

While Joan recalled that she couldn’t see how exercises were going to give her any benefits:

It’s not going to do me any good (Joan, 79, RH5).

Many residents found the initial idea of goal setting difficult to grasp, with longer staying residents having more difficulty in grasping the concepts of goal setting and the whole proposition of being more independent:

I said to Linda (nurse manager) what on earth do they want to do all this for? I don’t mind having things done for me. I had got so used to it now; I have been here so long (Lara, 90, RH3).

7.3.2 Getting started
Getting start in PILS emerged as an overarching theme and residents identified specific activities that occurred during this phase. Setting a goal, having a plan to
follow and having to pace one’s self were reported about the time of agreement to participate in the trial. Having the resident take responsibility for setting the type of goal was unique to this study. In other studies that record goal setting as part of a physical activity intervention the goal was generally set by staff rather than the resident (Morris et al., 1999). Rehabilitation and health promotional research shows that goal planning by the person is associated with more successful behavioral change than when goal planning is not included or goals are set by health professionals (. Locke & Latham, 2002; Wade, 1998).

Goal setting
Setting a functional goal involved asking residents to think of something they had not done for awhile, something they would like to do now, or perhaps a social event that they wished to attend in the following months. Chapter Three details the goal setting process.

Spending time with each resident ensured that the specific goal set had meaning for them. Most residents referred to past experiences of participating in light to vigorous exercise, which then helped them think about a goal that had a functional component. Several residents referred to leisure activities that included exercise. While the older men talked about golf, bowling, and gardening, the older women tended to refer to housework, gardening, and walking as exercise. Several residents illustrated how they formulated their goals:

*I did have two goals. I wanted to continue walking to the mall each day to keep fit. The other goal was going to Adelaide to attend a week of opera concerts. Keeping up my fitness level was very important; otherwise I wouldn’t have been able to keep up with the opera group* (Roa, 81, RH5).

Harry, who was already fairly active, wanted to extend this greatly:

*Well I was already walking initially just around the car park a number of times, then I realised that wasn’t much of a challenge, so my aim was to get up the drive to the hill at the top* (Harry, 80, RH1).

Interestingly, most residents were unable to recall the actual goal set. For those that did recall some goal activity, they remembered that it had to do with getting fitter or
making them happier. As one resident delightfully reported, she could not remember her goal because:

_Oh gosh! I have had a sleep since then_ (Lucy, 86, RH2).

Others noted that:

_Oh I think it was about making me feel better_ (Phil, 90, RH1).

For another resident ‘sort of remembering’ was enough to make her feel content with her lot:

_I sort of remember but I know if I died I could say I died a happy woman_ (Alice, 85, RH1).

**The prescriptive exercise plan**

The current study developed a prescriptive exercise plan for residents. Examples of exercise plans can be found in Appendix 2 and there is an explanation of the programme’s development in Chapter three. The findings in this study show that qualitatively, having a written exercise plan is an effective tool to support self monitoring. The majority of residents valued the Promoting Independence Plan (PIP). The plan was important to them in a number of ways. They described how the plan acted as prompt, provided information about the exercises they were required to do, and facilitated a social connection between other participating residents and visiting family and friends:

_Yes it was kept up on the wall, and when I went and visited my friends in their rooms we were able to talk about what we were doing and compare our plan_ (Lucy, 86, RH2).

_And once the plan was up there, I knew it was something I had to do everyday. Because I know that it’s got to be done_ (Joan, 79, RH4).

For residents with a degree of short term memory loss it made sense to provide them with documented cues relating to the goal, illustrated by two residents’ accounts when recalling the plan:

_Yes the plan, it helped me remember what I had to do_ (Edna, 82, RH1).

_Yes it helped me remember what I was doing; you know the exercises and that_ (Ivy, 85, RH3).
Overcoming anxieties

Putting PILS into action initially required residents to overcome the preliminary doubts and worries they were experiencing. Almost all residents talked about not having the confidence to do the extra prescribed physical activities during the day, while a number of residents were worried about setting too ‘big’ a goal:

I was trying to get on with life; occasionally you might have a goal but not a big one like this (Mary, 80, RH2).

Several residents spoke of their anxiety as a loss of confidence:

At first I thought it was something that I wouldn’t have been able to manage I couldn’t go down the corridor on my own, you might know but I had had several falls last year and since then I had kind of lost confidence in myself (Elise, 89, RH5).

The physical environment of the facility was often a concern, and this was closely linked with furniture and equipment. Adaptation of equipment was something of a mission in all facilities – beds and chairs in residents’ rooms were often at the wrong height for residents to perform safe transfers or to sit down and stand up independently as one resident related:

There was nothing to hang on to. No it wasn’t good to lean on the wall you know (Joan, 79, RH5).

Out door areas provided other hazards, as did corridors and entrance ways involving steps:

At first I thought it was something that I wouldn’t have been able to manage. I couldn’t go down the corridor on my own (Phil, 90, RH1).

My goal was to get outside by myself, something I hadn’t done since I broke my hip last year. But I was really worried about the steps they were steep (Molly, 85, RH1).

Coupled with these fears, the residents described how initially they doubted their ability to participate because of increased tiredness. This was described by most residents as feeling exhausted during and after the exercises. This tiredness was especially noticeable during the earlier weeks:

I must have a lot of rest and not overdo things. It’s a matter of not getting too tired because then you don’t enjoy things as much if you are too tired (Roa, 81, RH5).
I was worrying about my knee and it’s wonky. I was exhausted by the time I got back (Alice, 85, RH1).

Residents recalled early tiredness acting as a motivating factor, reporting that following a short period of bed rest they noted how quickly they became weak:

I noticed when I got up how my legs felt weak and how it took me twice as long to do my usual walk around the corridors. So the next time I was told to rest in bed because of my legs I refused (Betty, 88, RH5).

Residents who experienced diminished lower limb strength during enforced bed rest, usually due to illness, reported a struggle in the early stages of the exercise programme which acted as a prompt to get up and be active a lot earlier than they would have normally.

Remembering past physical activity ability helped another of the residents to improve her fitness level:

I used to walk a lot. I could walk a fair way. I used to be able to walk to the corner where the shops are. I started again by walking up to the gate (Phil, 90, RH1).

Pacing themselves

Residents who were initially more independent talked about how they incrementally increased their physical activity, which in turn enhanced their overall fitness level, through experiencing discomfort, stepping up the exercises, and working through the challenges. Residents described how they gained confidence as they increased their fitness level:

Well I worked up to the top of the hill and that just about killed me. I started by just going half way (Morph, 92, RH5).

This comment was supported by the other residents to some degree. The independent residents found that by increasing their walking distance, they could improve their strength:

I can now walk around the deck at lunch times and tea time. Before PILS I would just be able to walk to the dining room and back (Elsie, 89, RH4).

I used to try and walk outside every morning on my own but I just didn’t have the oomph to go. Now I try and get up the hill once a day. I have my caregiver come in a case I fall (Harry, 80, RH1).
Residents with higher care needs required the staff to pace them rather than do this themselves. These residents talked about how they were already relying on staff for assistance with a number of their activities of daily living. Assistance with the extra exercises embedded in their activities of daily living was essential to ensure these residents participated fully in PILS. These residents had mixed feelings about relying on staff to assist them:

*The caregiver helped me only with my walking. I was told on no account that I could walk by myself (Harry, 80, RH1).*

*Part of my PIP was to walk down to the dining room which was something that I hadn’t been doing. I had to rely on the caregivers to help me. Which didn’t always happen as they were so busy and short staffed (Molly, 85, RH1)?*

### 7.3.3 Staying on track

New routines and changing activities of daily living into an exercise programme required residents and staff to work in different ways. The importance of routines, set in place for organizational efficiency, were essential for caregivers as routines allow staff to gain some sense of control of what often appears to be overwhelming demands. Routines provided security and offered a sense of predictability. Against this backdrop, residents were required to adapt to new routines to sustain PILS during the six month trial period. How they went about this and what motivated them to stay on track are the emergent themes in this section.

**Routinising physical activity**

Not only did the caregivers have to adapt to a new routine; so, too, did the residents. Affirming independent actions and being careful to work towards incremental changes as residents began to fit PILS into their daily routines emerged as important to success. The more independent residents described how they loved being allowed to do simple things, such as showering with minimal assistance, choosing the clothes they wanted to wear and dressing themselves:

*They gave me this back scrubber and that really helped me get on with being able to shower myself. I really liked being able to do it all myself. You know, I hadn’t been able to do that for nearly four years since I came here (Ivy, 85, RH3).*
The more dependent residents described how it took a lot longer for them to complete tasks as they began to rely less on the caregivers:

No I just realised that by doing these things [the exercise] it would gradually come easier. At first it was a real effort to get there but you do know if you do make yourself and you get cracking, you know that it will get easier in time (Mavis, 92, RH5).

I wasn’t very confident at all when I started out but I wanted to get outside again so that kind of helped me focus. It just became part of my daily activities in the end (Joan, 79, RH5).

Getting to understand the new routines and what the residents and staff could and could not do was also helpful during this time. The relationship between staff and residents changed and residents often named a particular staff member who supported them the most:

Yes they [the staff] did, they would come in and ask me, have I done any exercises, and especially K, she was always a good reminder. The others girls just knew I was doing the exercises so they didn’t have to remind so much (Roa, 92, RH5).

We had the plan up there, and we could have asked for help but F was a big help, took responsibility to help us all (Phil, 90, RH1).

Other residents talked about the researcher’s role in helping them establish their physical activity routine:

Because you [the researcher] set a programme for me on what I had to do, and a set of exercises that I still do twice a day. And once the plan was there it’s something I did everyday because I know it’s got to be done. You coming in every week helped. Just hearing your voice made me sit up. This has been a help a real help to me (Molly, 85, RH1).

7.3.4 Motivation to keep going
All residents in this study set a goal which the majority attained (see Chapter 6, Table 15), while others chose to modify the goal during the intervention period. Aside from goal setting as a motivational aid, having something to do and helping each other were strongly linked to providing ongoing motivation. In addition, having goals had the effect of humanising the residents some of whom as described in Chapter 5 had lost their identity as a person and had simply become a resident. Peer support, described as supporting each other, was a central theme for the residents in maintaining momentum over the period of the PILS intervention:
It felt good I had this goal before but it was only me, and sometimes it can be a bit isolating and you have to talk yourself into it. You think, should do those exercises, but then someone comes along and is interested. Then you want to do it, trying to achieve something, which makes you want to do it. It makes you more focused I think (Roa, 81, RH5).

Yes I think it has, I think, it because someone is interested (Elsie, 89, RH4).

Regular meetings motivated residents when they knew they had an exercise class to attend daily:

Yes, I do I look forward to getting to the classes everyday. I wouldn’t miss it now (Joan, 79, RH5).

Yes I go everyday. Everyday we do the programme down here in the craft room. It has become a real commitment for me (Lucy, 86, RH2).

Staff also played a role in motivating residents. The residents described how they felt when the staff began to show an interest in what they wanted to achieve:

K [caregiver] was really excited for me when she could see I was improving. My goal was to go to my granddaughter’s wedding, and when she knew this she really became really interested and helpful (Ivy, 85, RH3).

Although participants generally described staff as providing motivational support, in other cases they perceived staff as having destructive behaviour. One resident perceived this as constraining behaviour, intended for the overall safety of the resident, as being obstructive:

The [caregiver] helped me only with my walking. I was told on no account that I could walk by myself. I did realize later how important that was because of the traffic. I could see traffic coming to my right but I couldn’t gauge the speed it was coming. I couldn’t cross the road with confidence, and the step down from the curb to the road was sometimes difficult. I came to accept that they were right. (Harry, 80, RH1).

Motivational aids were also provided in the form of equipment to support and assist the residents towards achieving their goal and getting fitter. Residents began to notice staff engaging with them in a different way and seeking their advice regarding specific equipment, for example the height of a raised garden bed, and where particular plants could be obtained. In addition, some staff sought advice regarding the placement of chairs in the facility corridors and the purchasing of park benches for those who were increasing their walking outside.
7.3.5 Adding meaning (purpose) to life

The overall notion of “having something to do” was poignantly described in Chapter 3, and participating in the physical activity programme indeed appeared to give the residents something to do. The sub categories of helping each other and making themselves useful illustrates the sense of purpose the residents felt while participating in PILS. Overwhelmingly, not only did the physical activity intervention provide purpose in the resident’s daily life, it also appeared to provide new direction:

Oh, it’s good you know that when you get up in the morning you know that you have your exercises to do. By that time it’s about 11.30, its time to come back and get tidied up and go for lunch, and then after lunch we play scrabble, not every day, but a good part of the week (Lucy, 86, RH2).

I am often at my daughter’s on the weekends, which I didn’t do before I started the exercise. It seems a long-time ago now when I couldn’t do the exercises. I need something more than that, so I have got myself helping with the chores at my daughter’s. I can sit down and do the veggies for tea. It has made me think about other things I can do (Morph, 92, RH4).

Oh yes, I feel much much better, it gives us something to aim for, and we can walk better and do things better (Joan, 79, RH5).

Helping each other

‘Helping each other’ emerged as a way of supporting other residents to stay on track with the PILS programme. Residents talked about how PILS provided some sense of community that linked them, firstly through informal chats in places such as dining rooms and lounges. This led a number of the residents to establish or join established walking groups. Once the residents found this common ground they would:

Help each other with verbal encouragement, setting up exercise classes in the weekends and evenings and reminding each other what needed to be done (Morph, 85, RH4).

Secondly they also sought each other out for recognition when they had achieved their goal, as well as offering encouragement for others to ‘keep at it’, a term that was used by participating residents.

Taking initiative to maintain activity

Having a sense of purpose and offering a helping hand altered the ways that residents perceived autonomy and independence. Realising that on a day-to-day basis getting
caregivers to assist or support them was not always going to happen, due to caregivers’ other work commitments, the residents set about taking charge of the intervention at both an individual and group level. At a group level, residents in several participating rest homes decided that they would get together on public holiday weekends, as they knew the caregivers would be more short staffed than normal. This was illustrated by one resident who stated:

*Well we did have the programme over the holidays, as we did it ourselves (Ivy, 85, RH1).*

*A group of us decided one morning over breakfast and off we went down to the activities room. We let the others know as well (Phil, 90, RH1).*

This finding suggests that increased physical function acted as a positive reinforcement to the ultimate aim of improving independence. Having successfully run the physical activity programme for residents on public holidays and long weekends, residents now extended this to most weekends. By undertaking this role the residents not only felt that they were taking charge of the situation, they were also having a sense of control and motivating others to join in:

*Oh yes. The old lady is 100 and something and the other lady broke her hip. I asked her if she would like to come to the exercises and she said yes. Now she often comes. There are two others in this wing who are involved as well now (Lucy, 86, RH2).*

*Well another resident and others came along when we did it [the exercise class]. I don’t think they were very keen, but they came and they still come (Phil, 90, RH1).*

*Sometimes I would say, I can do it in here, sometimes I would go down to the exercise classes in the weekends that the ladies in the wing had arranged (Molly, 85, RH1).*

Gender as an issue seldom emerged except in relation to being in charge as some of the male participants became fitter. Two of the male participants were negative towards staff in what they saw as being controlled or held back:

*We went half way, then we knew when we had got half way we could do the rest. But I did feel quite controlled at that time (Harry, 80, RH5).*

Another male participant described how he felt restrained when wanting to go into the garden (part of his goal) believing that he had improved enough. However he cited:
I was reprimanded severely by the nurse manager, she told me I was at high risk of falling and that I should have waited until I was much stronger. I felt alright and I did have my walking frame to lean on (Eric, 86, RH1).

This suggests that once the men set a goal they considered themselves more than capable of, they wanted to ‘get cracking’, a term they often used.

7.3.6 The benefits

The benefits that residents identified relate to physical and psychosocial perspectives.

Improved fitness and strength

Residents in this study gained insights into their physical ability which provided them with the confidence to increase the intensity of the activity programme:

I have adapted the sit to stands to suit me more and more Oh yes I am outside I have got my destinations sorted. Now I go twice a day on a different circuit. I am still getting up the hill but if I couldn’t do that I will have to think of other things (Harry, 80, RH5).

Physical benefits such as getting fitter and attending alternative programmes were also a focus:

Yes it does really it does something, as you are not sitting on your bum all the time the exercises get you up and going (Ivy, 85, RH3).

Yes I did get fitter; I would never have gone to the falls prevention programme. I wouldn’t have done that if I hadn’t been on your programme (Roan, 81, RH5).

Other residents were now reaping the rewards of their hard work:

I was not able to get in and out of the car when the daughter came to take me out. I was so worried before and now I can do this transfer all by myself again it feels wonderful (Joan, 79, RH5).

Conversely, several residents gained no benefits stating that they did not really get involved with the intervention, that they just got on with what they normally did:

I just do what I want to do and that is all. I didn’t in the end want to do the PILS programme (Ena, 90, RH5).

Improved independence in activities of daily living

Promoting independence was one of the key elements in this study. Regaining or maintaining some level of independence by improved physical function provided the opportunity for residents to perform their activities of daily living with increased
ability and strength. In addition to physical benefits identified by residents, self care improvements such as dressing, showering and getting on and off the bed were described:

I can also dress myself once I’m showered; now I can help myself (Elsie, 89, RH5).

I used to have to ask for help before I went on the programme, now I can get off the bed on my own (Lucy, 86, RH2).

I have noticed getting on and off the chair using my arms is a lot easier (Grace, 95, RH3).

Residents indicated their growing independence made them less reliant on the caregivers:

It was mainly myself – no it was myself. The caregivers didn’t really help and encourage me (Roa, 81, RH5).

I am so much better now, I rarely ring the bell now and at 10pm at night they bring the commode in and I get up by me (Morph, 92, RH4).

Independence does not always mean doing everything for oneself, and furthermore the meaning of independence can change during a person’s life. There are few functions more cherished by older people than the ability to move about unhindered and at will. Walking to, when, and where they wish is proof that they still possess some measure of independence. One of the frailer residents who participated in the study commented:

I kept myself going, doing the exercises because my goal was to be able to go by myself to the toilet which is just off my bedroom. I knew I would never be able to climb Mt Everest but going to the loo was enough for me (Mary, 85, RH2).

Other residents who had poor functional ability due to long standing disability and who made little gains in regaining independence, described feeling disappointed in themselves:

I never really got a chance I was on this gutter frame and needed two to transfer and assist me with my walking. It was hopeless I was so reliant on the caregivers when it came to the exercises. Now I am really disappointed I never got any better (Eric, 86, RH1).
Improved well being

When residents referred to feeling better, they were referring more to their mood and well being than to physical improvements:

*It made me feel very, very glad [doing the exercise] and I am getting about much better* (Morph, 92, RH4).

*It is something to look forward to every day now* (Lara, 90, RH3).

Residents began to notice the overall beneficial effects of the PILS programme on their mood in general:

*No I think we are more active – I think we feel a lot better. I know I do* (Lucy, 86, RH2).

These feelings of improved mood occurred not only because of participating in their daily exercise regime, but also as a consequence of achieving the goal, or accomplishing some physical challenge along the way:

*I felt great that I got to the top of the drive. I was completely out of breath when I got there but I knew that it was one step closer to my goal* (Morph, 92, RH4).

*I was so excited when I got down to the Mall to have morning tea with my son. That was my goal you see* (Harry, 80, RH4).

Residents also recognized that reduced feelings of depression may well be linked to having been provided with a sense of purpose:

*Well you just wonder, before I often felt down in the dumps, but now well you miss it if you don’t do the exercises, put it that way* (Mary, 85, RH2).

*Oh yes, it has it definitely has made my life more enjoyable* (Roa, 81, RH5).

Not all residents felt uplifted or had improved mood; negative comments were also made. Residents who were more reliant on staff for daily assistance to help with their sit to stands and walks often felt sad, angry and disappointed in the staff for their lack of application and in themselves for their lack of improvement. Some goals were abandoned and new goals were difficult to set. This was expressed by residents who
were cognitively intact but physically frailer, and also those residents with mild
cognitive impairment.

**Improved spiritual well being**

Some residents described emotional psychological effects in terms of spiritual well
being or an enriching experience:

- *Well the limbering up of yourself. It gives you a daily uplift, like your prayers*
  *(Lucy, 86, RH2).*

- *When I wake in the morning I think let’s get going, I am happy within myself. I have something to look forward to everyday now* *(Molly, 85, RH1).*

**Improved engagement with family**

Families on the whole remain integral to the older person following admission to a
residential care facility, and this was demonstrated in PILS by the number of goals set
by residents that were family orientated. For example, attending a special family
function such as a wedding, going on an outing with family, or going to the family
home. Prior to participation in PILS, visiting family and friends was something that
a number of residents were physically unable to do or lacked the confidence to
undertake:

- *Yes it’s a lot to do with confidence, because when I was at my daughter’s I felt that finally I felt really back in the family. It’s lovely to go and sit at my daughter’s* *(Grace, 90, RH3).*

- *I went down to my daughter’s at Palmerston North a month ago. The family said I shouldn’t go but I wanted too. We went in a car, my son’s car. We had little stops and walks along the way, and cups of tea. I never could believe this but got there, it was lovely* *(Mavis, 92, RH4).*

**Re-evaluation of what it means to be old**

An unexpected outcome of participating in PILS was that some of the residents’
acknowledged that living in residential care did not necessitate sitting around all day.
For a few residents it removed the stigma about living in residential care and about
being old. It reaffirmed a sense of self:

- *I was quite pleased you [the researcher] were making me do something, instead of just lying about and thinking I am old* *(Roa, 81, RH5).*

- *We don’t know how long we are going to live, do we. If I died I could say I died a happy woman now. Being part of this programme has really made me feel I am not worthless even at my age* *(Phil, 90, RH1).*
Chapter 7: Findings, the residents’ perspective

For other residents becoming older did not mean the end to living:

*PILS made me realise that I although I am growing older and have my health problems, I am still living, not vegetating, still keeping up with the times* (Mary, 85, RH2).

### 7.4 Discussion

Capturing residents’ own stories of taking part in a functional based activity of daily living exercise programme (PILS) has allowed a much richer picture of participation and its benefits to emerge, including how they shaped the exercise programme into their daily lives. To our knowledge this is the first examination of the meanings for residents who participated in a goal driven individualised functional activities intervention (Masso & McCarthy, 2009). Previous qualitative studies undertaken in residential care have addressed a number of important questions such as socialization (Mor, Branco, Fleishman, & Hawes, 1995), quality of life (Guse & Masesar, 1999; Ryan & Scullion, 2000), quality of care (Kane & Kane, 1995); and environmental issues that impact on older people such as cross cultural care (Bland, 1999; Kane & Kane, 1995; Kiata & Kerse, 2004; Nay, 1993). This chapter adds to that knowledge by reporting on the meanings of participating in a physical activity programme to improve function and quality of life.

Being frail and old was perceived by some residents as an initial barrier when considering taking part in PILS. Overcoming initial perceived barriers and unknown expectations, the residents in this study increased their uptake of the programme by discussing with family and staff the possible benefits of being involved in PILS. Family and staff relationships have been shown to have an important role in the residents’ lives, as discussed more fully in Chapter Five. Families have also been shown to have an important role with adherence to activity programmes in clinical settings (Hertzberg et al., 2001). The low refusal rate during recruitment, when from a total of 208 eligible residents only 26 refused to participate, demonstrated that this method of ensuring discussion of the research with family had merits.
Anticipated benefits of participating in PILS appeared to act as a buffer to one’s own beliefs and attitudes. Age has been reported to influence self efficacy expectations, as well as exercise behaviour and activity; however less is known about what makes older people decide to actually engage in physical activity (King, 2001). What is known is that women have lower self-efficacy expectations than older men. For example, a study exploring exercise adherence during the first 12 months following cardiac surgery showed that women were less likely to exercise than men due to their beliefs and attitudes (Jenkins & Gortner, 1998). This study refutes this, finding that women were just as engaged in the activity programme as male participants. A recent systematic review by Forster et al 2008 exploring the benefits of rehabilitation in long term care found that 70 percent of participants were female, and several studies reported successful engagement in physical activity programmes (Grilly et al., 1989; Riccio et al., 1990).

This study poses an alternative argument, that for some residents the physical activity programme that was goal driven developed a sense of personal mastery or a ‘can do’ attitude. According to social cognitive theory, individuals are capable of influencing their own psychosocial functioning through mechanisms of personal agency (Bandura & Cervone, 1986). The nature and structure of self efficacy may shed some light on the view that successful experiences, including past exercise, makes one feel more capable. Those residents who were already physically active or who exercised regularly when they were younger may well have agreed to participate because of this past experience. Those residents who refused to take part may have been uncertain about their ability. We are unable to test this as we did not ask those who did not participate why they chose not to.

Taking part in this intervention with its emphasis on functional ability was an attractive option for residents experiencing a decline in functional status. Residents’ care needs are not routinely reassessed after they are admitted to residential care facilities, although reassessments can be requested. Reassessments generally occur on an ad hoc basis, usually arising from a medical reason. Even when residents’ functional ability is declining, requests for allied health professional input are rare. Provision of allied health professional expertise is not a mandatory requirement of Ministry of
Health standards of care for stage two residential care facilities (Ministry of Health, 2005). Residents endeavour to make the best of their abilities by adaptation of tasks such as dressing, showering and walking. A recent study has shown that women in particular may accommodate to declining mobility and health status by altering and adapting to their physical limitations rather than seek medical help (Gregory & Fried, 2003). The present study adds to the debate in finding that older residents were more than willing to partake in an activity programme and at least some of them felt considerable benefit.

7.4.1 Physical improvements

A number of residents in this study described how they felt fitter with better upper and lower body strength. Getting fitter allowed these residents to accomplish more although energy levels fluctuated, especially during the earlier start up phase. Numerous studies have demonstrated the positive effects of resistance training and more recently studies in residential care show some benefits of strength based training programme for older people (Fiatorone et al., 1994; McRae et al., 1996; Morris et al., 1999). Older people enrolled in a home exercise programme involving goal setting and pain attention were successful in both improving physical activity and decreasing pain over a 12 week period (Stenstrom, 1994). Mayer and Jermanovich (1994) showed a positive outcome at one-year follow-up of an intervention trial with a group of community dwelling older adults that included goal setting. They reported the intervention group improved significantly in both strength and flexibility of lower limbs. In residential care interventions to maintain mobility among long term care residents are effective with benefits to empowerment and well being frequently reported (Baum, Jarjoura, Polen, Faur, & Rutecki, 2003; McRae et al., 1996; Schnelle et al., 1995; Tappen et al., 2000).

Reasons why residents do not respond to physical activity interventions are multifactorial, with loss of confidence in mobility tasks shown to be a strong predictor of sedentary behaviour in both residential and community dwelling older people (Cress et al., 1995). Deconditioning in the older adult has been extensively described in the literature, in particular around frailty and being sedentary (DiPietro, 2001; Fiatarone, 1995). Residents overcame such barriers as they began to feel
stronger. Evidence has shown that physical activity had the strongest effects on self-efficacy, while improvements in strength, functional capacity and cardiovascular status were linked to improvement in overall well being (Netz et al., 2005). Strength based interventions supplemented with psychological empowerment has been shown to enhance the desire for strength and self efficacy, as shown in a recent study of a group of older community volunteers (Katula et al., 2006). Such studies have not been found in long term care research (Masso & McCarthy, 2009).

Results of an individualised exercise programme such as PILS may provide insight about ways to improve the uptake of physical exercise. Residents placed value on the physical activity. This valuing may moderate the effect that a physical activity intervention has and lead to increased satisfaction with physical function, as well as increasing more global ratings of life satisfaction. Such a mechanism has been suggested (Rajeski, Mihalko 2001). Oishi et al. (1999) found that there are considerable individual differences in types of physical activities that people find satisfying and that these activities are value driven.

### 7.4.2 Routinsing PILS

One of the most important themes to emerge was that improving functional abilities in with meaningful activity, something that the residents referred to as ‘giving me a purpose’. Frequently residential care facilities are places where older people pass time with little interference from the wider community, so much so that, as Paterniti (2003) suggests, rest homes homogenize residents’ lives so that their separate biographies become the common story. This study challenged such assertions by asking individuals to reclaim identity by setting a goal that had personal meaning to them as well as a functional component. Engaging residents to re-consider personal autonomy was a major challenge here as in other research.

Nay (1993) found a clear distinction between the concept of having something to do and making yourself useful. Having something to do involved more than passing the time, whilst making yourself useful was about helping others. In Chapter 5 residents grieved about not having a sense of purpose and expressed a need to experience more meaning in life. Here they reported that participating in the goal oriented
activity programme gave them that meaning, showing that this process of reasserting autonomy was possible and, at least for some beneficial.

Fitting PILS into the daily routine required some behaviour changes from residents. Residents as a group regained temporal control over their activities. Changing old habits in residential care settings has been extensively written about (Bowers et al., 2001; Kane, 2001). Recently some residential care facilities have engaged in successful change models encompassing a total resident-centred approach to care delivery. Such organisations include the Eden Alternative Foundation, Live Oak Living Model, Providence Mount St Vincent, and the Green House model (Stone & Wiener, 2001). Our findings are supportive of the principle of resident-centred approaches in that returning autonomy, in this instance in the form of a goal setting process, can result in increased empowerment and meaning.

7.4.3 Motivation
The results of this study point to the importance of working and communicating with residents to define a goal that has personal relevance and meaning. The goal setting activity provided residents with a focus that was meaningful, heightening their awareness and focus on becoming more active.

Motivation for residents clearly involved more than just the personal goal; it also involved belief in one’s ability, as proposed by (Conger & Kanungo, 1988). Self efficacy judgments and behaviours are stronger for those who hold the general belief that there is a relationship between behaviour and their health (Locke & Latham, 2002). In a study of 187 older adults living independently in a long term care facility, participants reported that outcome expectation independently influenced exercise behaviour beyond the effects of self efficacy expectations (Resnick, 2000).

Clark (2005) found similar results in a small qualitative study of community dwelling older women with osteoporosis who explored the meanings of health, quality of life and well-being, and found that the perception of these three constructs were reflections of participant’s lived physical and social realities. Working with residents at an individual level as part of the intervention protocol ensured that each person’s
experiences and expectations were encompassed in the programme, which was imperative to strengthening their outcome expectations and partnership in the programme.

Residents in the current study who struggled with compliance with their exercise plan because of current physical limitations, rather than ‘couldn’t be bothered’, found hidden strength and determination. Other studies have found a similar trait, for example, determination was identified as an essential component of motivation to participate in another functional activities intervention (Resnick, 2000). Self motivation consistently correlates with physical activity and has been suggested to be indicative of the types of individuals who are prone to be active or inactive (Dishman et al., 1985).

The Promoting Independence Plan (PIP) written in a perceptive manner provided residents with a road map towards their expected outcome. It appears that successful goal achievement and maintenance depends on the implementation of an action plan that includes a set of cognitive and behavioural skills that assist people. The guiding premise is that people will maintain a change in behaviour if they are satisfied with the method of monitoring (Mayer et al., 1994). Community based physical activity studies have reported a variety of ways of monitoring goals which have had moderate success to-date. These include health contract calendars and monthly telephone contact (Friedman, 1998; Haber & Looney, 2000). Physical activity programme monitoring systems in residential care are less evident, with most studies reporting compliance rather than exercise plans per se (Forster et al., 2008).

7.4.4 Independence

The complexity of maintaining one’s independence is entrenched not only because of existing disabilities and functional status but also institutionalised processes that resonate across a number of chapters in this thesis, including the literature review and roles and realities in chapter 5. Residents’ willingness to involve themselves in activities to promote independence against a backdrop of dependency has been explored by Baltes and her colleagues and Blair (1999). Baltes (1983) observed resident and staff interactions and found that when nursing assistants provided positive reinforcement of dependent resident behaviours during interactions this
resulted in increased resident dependency. The current study developed this idea further to show that the caregiver promoting independence is possible and may actually be welcomed by residents.

Do strategies that promote participation in self care provide benefits to residents? Interventions that promote more effective therapeutic outcomes using assistive devices have been shown to have a positive outcome. Assistive devices such as shower stools, shoelace threaders, can provide a level of independence Back scrubbers were offered as an assistive aid for residents in this trial and were described by the residents as being useful. Improving self grooming skills promotes independence, improves hygiene and preserves a sense of self efficacy

Studies have shown that maintaining one’s ability to attend to personal hygiene and appearance can positively affect an older person’s self esteem, desire to participate in social activities and a general sense of well being (Brown et al., 2004; Choi et al., 2005; Karl, 1982). Specific interventions designed to improve older person’s self care ability have been noted to be effective (Blair, 1999; Lim & Taylor, 2005; Tappen et al., 2000). Lim (2005) used systematic prompting and social reinforcement to nursing home residents with dementia. Residents who participated in the intervention demonstrated significant increases in grooming independence. Other interventions include behaviour management, nursing assistant training, and functional skills training. Schnelle, Alessi and colleagues (2002) demonstrated that a one-on-one intervention that encouraged nursing home residents to walk, to repeat sit to stands at each 2 hour prompt, and to participate in daily upper body resistance training, significantly maintained or improved residents’ performance.

PILS allowed older persons to be actively involved with the design of their personal exercise programme involving their activities of daily living. Clearly most residents engaged fully in the intervention and enjoyed being part of programme. However, residents with high dependency needs felt let down. Although these residents contributed to the design of their exercise programme, due to organizational factors, primarily reliance on staff to assist and support them to complete their exercise programme, this group of residents missed out. If these individuals were unable to comply with the programme this may well have contributed to the inability to show
an effect in physical performance and health related quality of life at six months. The effect at three months may have been as a consequence of the researcher being fully immersed in the rest home, and reinforcing the need to assist all residents in the intervention group.

Over the last decade a number of studies have shown or suggested that passive health care maintenance, rather than dynamic, proactive health care has occurred when staff viewed the individual as too old or sick (Fiatarone, 1995). Kane (2001) argues care staff need to understand that quality of care and quality of life for residents are two concepts that are interwoven, and that quality of life should be elevated as a priority goal in long term care rather than a moral afterthought to quality of care. The ability to maintain or regain as much independence as possible, in order to continue to make immediate daily life and health care choices, is imperative particularly for individuals who are more functionally dependent. Despite staff’s best intentions they were often swept into the pursuit of organizational rather than residents’ goals.

### 7.4.5 Quality of life

Quality of life issues relating specifically to older people in residential care have been discussed at length over the past decade. This study also sought insights into whether a physical activity intervention had an impact on residents’ health related quality of life. Health status and health related quality of life are terms often used synonymously in medicine. The intervention had no effect on health related quality of life as presented in the quantitative results chapter in this thesis; however, improvement in residents’ self reported health status showed an effect at three months. Exploring the meanings within the qualitative data from the residents’ interviews gave no indication or sense of why this may have occurred. Residents’ perceptions of quality of life may be somewhat different from the interpretation of the data. Mc Dowell and Newell (1987) describe the term quality of life as ‘intuitively familiar’ (p. 382) implying that everyone knows what it means, when in reality the meaning differs from person to person.
Clarke (2003) reminds us that it is imperative that older people’s own experiences and perceptions of quality of life and well being are reflections of their own physical and psychological health. It is notable that residents in this study emphasized participation and its benefits, focusing on experiences that the intervention offered them. For example, residents described peer support, helping each other and adapting the programme to suit their own needs as factors that improved their quality of life and well being.

Other studies have identified dignity, quality of care and comfort, choice, the physical environment and social needs as factors that provide quality of life for residents living in long term care as described in Chapter 5 (Kane, 2001). The residents’ meanings in this study showed that self determination, participation and dignity were the most important factors that improved their quality of life while participating in the intervention.

In order to understand the possible causal link between physical activity and improved psychological wellbeing a recent meta analysis by Netz (2005) showed a link between physical activity and well being in older adults without a clinical disorder. Rajeski (2001), states that health status is used interchangeably with quality of life and measures such as the SF-36 have reported a strong relationship with global measures of life satisfaction. The apparent effect on depression can not be substantiated quantitatively as no measure of mood such as the geriatric depression scale was used in the current study. Empirical studies have found effective residential care interventions for depression include exercise McMurdo & Rennie (1993), Brosse et al. (2002) psychological treatments, especially cognitive behavioral therapy Cuijpers, (1999), and social interventions including group discussion, and social skills programmes to improve conversational skills Rattenbury & Stones (1989).

Residents in the current study reported that PILS provided them with a sense of purpose which improved their self worth and self esteem. This was demonstrated when residents began to value the benefits of the programme to the extent that they took control by actively facilitating group exercise on public holidays and latterly in the weekends.
A recent study by Kane (2004) found both cognitively intact and cognitively impaired residents rated ‘choice’ and pleasurable activity as important. Other quality of life studies undertaken in long term care settings have shown that the availability of personally meaningful activities and stimulation, and good resident and staff relationships among other components enhanced overall sense of purpose and well being (Tobin, 1999).

Residents in this study placed meaning on the goal driven activity that enlivened them to the extent that they no longer considered themselves in “God’s waiting room”. Loss of future meaning is often considered to be a hallmark of depression and alienation. Such problems are less likely to occur if goals and personal projects are shifted toward themes that depend less crucially on residual life expectancy.

7.4.6 Wellbeing

There is a growing body of evidence to support the view that physical activity is positively associated with psychological health including general wellbeing (McAuley & Rudolph, 1995). Of particular interest, findings related to residents’ wellbeing in this study fall naturally into a discussion of a sense of emotional wellbeing. Emotional wellbeing has been examined under topics such as happiness, life satisfaction and morale (Diener & Lucas, 2000). Whatever theory of wellbeing is chosen it must be acknowledged that events and circumstances must be understood in the context of the lives in which they are experienced. Contextual factors will change the meaning of activities or events for different people.

Residents talked about time in the context of the present; the present offering them a means to feel well in themselves by taking part in PILS. Clarke’s (2005) study found that older women defined the difference between quality of life and wellbeing in terms of temporality; quality of life is described as something that extends over a long period of time whereas a feeling of well being is temporary. Measured subjective well being as a main outcome has been reported in several studies; for example, Holahan’s (1988) study of older adults who undertook goal setting showed a positive benefit both in psychological wellbeing and life satisfaction.
Helping each other and taking initiatives were categories of interest. This unexpected finding suggests that social support constituted its own social structure for residents in the intervention group of PILS, despite the fact that PILS was an individualised activity. The interactions within the intervention group were unique with friendships and alliances being formed. Future exercise interventions might aim to develop specific buddy groups. Other successful physical activity trials have shown that this approach may have better outcomes (McAuley et al., 2000). In contrast studies that have explored social interaction of residents in long term care settings suggest that social relationships are not always favourable and do not always involve reciprocity (Nay, 1993).

The qualitative findings in this study show that residents well being improved if exercises were performed at least once a day. If, however, residents consistently completed only one set of exercises daily, an overall effect may not have been achieved due to the low dose. Physical exercise interventions that have a high exercise dose have been shown to be the most substantial moderating variable when examining the overall effect of physical activity on psychological well being (Netz et al., 2005). Organizational constraints including time and low staffing levels, combined with residents’ fluctuating functional status due to illness, often prevented the completion of exercises as prescribed on the PIP.

Gender difference is a well researched topic in relation to physical activity and exercise; however there is a paucity of gender research on participation of physical activity interventions in residential care. The men in this study tended to achieve their goal much sooner than the women, and were more focused and persistent with caregivers to support their functional exercise programme. Moss and Moss (2007) found that men living in long term care recognize their frailty and vulnerability at the same time as talking about their sense of agency and competence to participate in physical activity. This implies that a sense of agency outweighed functional limitation, as demonstrated by the men in this present study.

A cross sectional study among nursing homes in Finland measuring physical activity and predictors of physical activity found that men carried out more intensive
exercise than the women, regardless of the number of chronic conditions. Men who were less depressed and higher functioning were associated with a physically active life style (Ruuskanen & Parkatti, 1994).

In conclusion the results from this aspect of the study provide important insights for health professionals and researchers into what may motivate older people to begin and comply with a physical activity intervention. Specifically, an emphasis on the potential for individuals to return to previous levels of functional ability as well as meaningful activity, such as gardening, visiting family members, or attending church, may result in better adherence and compliance by residents participating in physical activity exercise programmes in residential care. The following section describes the staff perspectives of participating in and delivering PILS to the residents.
Chapter 8: Participating in the Promoting Independent Living Physical Activity Programme: The Staff Perspective

8.1 Introduction

This chapter interprets how staff, when engaged in conversation about their experience, attributed meaning to participating in the Promoting Independent Living study which aimed to improve functional independence, wellbeing and quality of life for residents. The experience of staff complements that of the residents Chapter 7 and elaborates on the quantitative results described in Chapter 6. The specific aims of the chapter are firstly, to establish the factors, from the perspective of staff, that contributed to the success and failure of the intervention for residents and staff. Secondly, it explores the impact of a physical activity intervention (PILS) on the work environment and the factors that may contribute to the motivation of staff to work in a different way. Finally, the level of sustainability of PILS within rest home facilities in order to maintain residents’ functional ability is explored.

8.2 Policy

The aged residential care sector is regulated by the Ministry of Health through the Health and Disability Sector Act 2001 and the Health of Older Person Strategy, which provide a national direction for all health and disability support services for older people (Ministry of Health, 2002b). In 2001, a total 32,689 licensed long term care beds were available in New Zealand. The state funding of these facilities totals $426 million in subsidies, almost 33% of the total disability services budget of $13,000 million, as discussed in Chapter 2. To monitor quality, safety and fiscal imperatives, service descriptions have been developed by District Health Boards’ funding arms to monitor care. These service descriptions define eligibility criteria for accessing the service, the scope of services required, and expected standards and
reporting requirements. These standards are contractual obligations and include the requirement for residents to have a lifestyle plan developed, implemented and reviewed regularly, based on a registered nurse’s assessment of the resident’s care and support needs. In the rest homes enrolled in this study they were commonly known as care plans.

Standard staffing patterns are set down in these contracts and Standards New Zealand state the base ratio and hours for staffing levels to ensure quality of care and safety (Ministry of Health, 2003a). Direct contact hours with caregivers should be no less than 12 hours per resident per week, while the minimal input from a registered nurse (RN) is no less than 4 hours per patient per week. For residents with high dependency needs housed in private hospital level of care, a registered nurse must be on duty at all times. The input of registered nurses during these hours must include assessment, care planning, intervention and education. Caregiver inputs must include provision of personal care, monitoring resident safety and ensuring that residents attend activities and exercise programmes.

In current circumstances it is highly unlikely that caregivers would provide this number of hours and targeted attention per resident, and the prescribed level was certainly not evident in any PILS facilities. Chapter 5 explains the roles and realities of working in a residential care facility. The international literature confirms that at all levels of care delivery, the ratio of staff to residents exist below the acceptable level and consequently, residents face a substantially higher risk of poor quality of care and outcomes. Once desired staffing thresholds are reached, other issues relating to staffing practices and management emerge as the major determinants of the quality of care (Kramer & Smith, 2000).

This study was unique in that it was envisaged that staff at all levels would be partners in the research. International studies have suggested that individual staff members have unique skills and strengths in the clinical setting and each may require different support to implement and deliver interventions (Engle, 1999). The findings reported in this chapter are based on qualitative interviews with nurse managers, registered nurses and caregivers who participated in the PILS intervention. The
transcribed interviews were coded and sorted according to themes and categories which emerged during the data analysis process. The category set was revised on a number of occasions in order to include all material from the staff interviews that were discrete from the residents’ perspectives. This also provided a means of establishing logical levels of data categories reflective of the data set contained within the transcripts.

8.3 Background

This study and other similar studies that have attempted to implement interventions that measured a change management component in long term care facilities have found complexity in the continuous interplay between the ideas about the context of change, the process of change and the content of change (Rosen, 2005). However, contemporary organisational theorists propose that in addition to process, historical, cultural and political features of change should be considered (Greenhalgh, 2004). Complex and far reaching change such as the PILS intervention intended to deliver was constrained by a backdrop of ‘total institutionalisation’ for both residents and staff, as described in the Chapter 5. While it would seem that simply defining the “why and when” of change would be sufficient, other studies have shown it is much more complex. Our goal in PILS was to bring consistency and order into the processes by developing an organisational infrastructure to support the implementation of PILS.

Chapters 2 and 5 of this thesis situate the rest home experiences within the broader historical context and, to some extent, the cultural and political context in which the intervention was established. In the previous chapter the data on the perceptions and experiences of the residents involved in PILS was presented and analysed. It was conjectured that implementation of the intervention would have specific characteristics reflecting the individuality of each facility, as well as factors that may be similar across all facilities. These differences or similarities at the facility, group and individual level would impact on psychological and behavioural reactions of the staff during the different phases of the intervention (Burke, 2002; Cummings &
Huse, 1989; Kapteyn, 1996). Consequently, the researcher recognised that attitudes and responses to trying something new would need to be taken into account.

There is a paucity of literature about dilemmas faced by researchers, not only in designing an intervention in residential care that is effective and efficient, but also one that staff will use and value. The following section discusses the staff perspectives during preparatory and early implementation phases of the intervention. Two overarching themes consistently emerged during the entrée and development phase of the intervention for staff. In the first theme, ‘the readiness of staff’ the subcategories ‘information sharing, building trust’, and ‘allaying anxieties and fears’ emerged. Often in published studies the definition of representative staff is unclear or not described. This lack of specificity in identifying whether staff is regulated or unregulated may hinder subsequent implementation and generalisability of interventions in clinical settings. To avoid this bias representative staff quotes in this study are labeled by role.

8.4 Preparatory phase

The researcher’s entry to rest homes enrolled in the study is critically important to the success of the study because the quality of implementation and subsequent outcomes depends on the relationship of the researcher with all those involved (Creswell, 2003). The staff interviewed in this study felt that without this critical factor, participation by residents and staff may have been hindered, or they may have refused to co operate during the implementation of the research. For rest home staff, being research partners was a new concept and they repeatedly talked about being ‘on guard’ and wanting clear answers from senior management within the rest home and research team regarding what was expected.

8.4.1 Information sharing

Building good relationships when working towards a process of change, as the current study intended, was regarded by staff as a fundamental first step in the preparatory phase, requiring good communication and sharing of information with all those involved. The majority of staff, including nurses and caregivers, valued the
communication and information provided by the research team and described it as helpful. The communications dampened anxieties and prevented misunderstandings:

*We thought that it was good and sounded alright, but we also thought who would do the work and how it would impact on us. Then when you [the researcher] explained what would happen we felt a lot less anxious and happy to know this might help the residents* (Mary, CG, RH2).

*Well you came here that’s how I first heard about it and then you told us what the ladies were going to do. I thought that should be good for them* (Kelsey, CG, RH1).

Staff agreed that communication provided the mechanism for them to understand the physical activity intervention and other contextual everyday organisational issues more easily. For example, the caregivers enjoyed learning about how you can make residents more active:

*When we went to those meetings in the afternoon and you showed us the diagrams of what the residents would get out of it especially the ones about sitting to standing and then we talked about it and about what it would mean to me and the resident I began to understand a little more about the fuss and everything* (Mary, CG, RH2).

*I thought this is exciting for the residents and I never knew all that stuff. I just thought the residents came to be looked after* (Kath, CG, RH3).

### 8.4.2 Building trust, bringing people on board

The emergence of this category arose when staff described the way collaboration did or did not occur between the researchers and staff. It explores tensions the researcher and staff experienced as they tried to make sense of the organisational setting in which the intervention was to be embedded.

There was a general agreement of nurses and caregivers that trust in the research team was essential during the preparatory phase. They described the influence that trust had on the successful implementation of the study:

*We really needed to get to know this person who was coming in, sometimes it was really inconvenient, but after a while when we got to know her better we didn’t mind at all her intruding on our time* (Judith, RN, RH2).

Interwoven in this idea of trust were feelings of mistrust expressed particularly by caregivers who felt promises of extra staffing might not happen:

*I thought that extra staff to support the perceived increased work load may not eventuate* (Anne, CG, RH1).
Such mistrust was related to past experience having been promised extra staff during a new project; this did not eventuate because of reduced resident numbers. These caregivers stated they were afraid that a similar promise would not be kept:

_This will mean that we will have to do this extra work on top of our daily work and it just seems unfair_ (Kelsey, CG, RH1).

This fear did in fact eventuate: staff in one particular rest home described how reduced bed occupancy prevented this facility from employing extra staff due to economic reasons:

_Lower than normal bed occupancy rates saw staff numbers reduced rather than increased as promised_ (Mary, CG, RH2).

Building relationships was discussed by most staff interviewed; nurse managers talked about it in the context of getting ‘buy in’ from the staff, while the registered nurses and caregivers focused on practical ways of working with the research team. Relationship building between staff and the research team required the researchers to be responsive to the needs of the rest home:

_Having an understanding of the routines of residential care, as well as arranging meetings at times that suited the rest home staff_ (Sue, NM, RH4).

_Getting the caregivers on board was going to be so important with them being so busy I wasn’t sure how this would go initially_ (Denise, NM, RH3).

_The researcher was very good and we respected her and she listened to our things_ (Kelsey, CG, RH1).

Previous physical activity interventions in residential care have found regimentation and lack of resources as limitations to successfully implementing interventions (Kane & Kane, 1987). In the present study, this led some staff being wary partners during the preparatory phase.

### 8.4.3 Fears and anxieties of staff

The research design involved randomisation of wings into intervention and control groups; this created its own problems in the preparatory phase, and anxieties emerged. One nurse manager describes the effect of randomisation on the staff in this rest home:

_It would have been much, much better in the beginning to discuss the project with all the staff. As the idea that the staff who were in control [group] and_
those who were [in the] intervention (group) didn’t discuss it together, caused major problems and kind of created a segregation. When you only have few staff involved and because of the segregation; if you have a couple of the staff who are negative then you are dealing with 50% of your staffing (Denise, NM, RH3).

These ‘anxieties and fears’ were attributed by some staff to having an unfamiliar person frequently turning up at the rest home. This specific finding was short lived for some staff who offered this perspective of the researcher’s role in this phase:

But listening to Kathy (the researcher) introducing the programme, and the potential that was there if it was implemented properly, it was just all very good and it over-rode the scepticism I think. I think it was positive that we could help some one (Linda, NM, RH3).

The caregivers described how:

They were left feeling unsure about the whole exercise thing and their main concern focused on how they were going to manage it (Irene CG, RHB).

Another caregiver expressed her general feelings at that time:

It really unsettled us, we were very worried, and some of us thought it might make us leave our job during that early time (Anne, CG, RH4).

One registered nurse perceived the research as a stand-alone initiative that would conflict with their already taxing workload:

We thought that this was your programme and your research and that you wanted to do out of (our) rest home. We thought that it was good and sounded all right but we also thought who would do the work, and how would it impact on us the registered nurse, and then health care assistants and who was going to do this extra work (Clare, RN, RH3).

While some were enthusiastic about the study, such as Linda, who “wanted to pick up the intervention and run with it” others had no real interest in the study:

Really I knew that I had to do it, wasn’t a passion of mine, it was part of my job and I just had to do it. ‘It kind of was, it was driven from above (Judith, RN, RH1).

8.4.4 Champions of change

The Nurse Managers in each of the facilities took on the early role of championing the intervention by being supportive of the programme and attempting to disseminate this in a positive but graduated manner. The majority of nurse managers described this process as a gradual, uphill struggle at times. Making time to ‘gear up’ the
caregivers in early stages was problematic. Caregivers cited tight schedules as the key reason and a nurse manager further qualified this issue:

*Initially time was the biggest issue, as they had very tight schedules and we also had a change with the roster. As we were part of the research we wanted the same caregivers to be looking after the same residents and that took a lot of convincing them [the caregivers] the benefits of having the same residents on a long term basis* (Linda, NM, RH3).

Finding a ward champion was important for another nurse manager, even though she was not personally enthusiastic:

*I think M (caregiver) was the key driver at the ward level. She really understood what I wanted and how it would work. She took it on board immediately and everyone else at ward level respected her and wanted to improve things for the older people they were looking after* (Julie NM, RH1).

### 8.4.5 Training in the new approach

During the preparatory phase it emerged formal and informal teaching methods were useful. The formal teaching sessions of one hour lectures informed staff about the underlying principals of the physical activity intervention, including the rationale of older people undertaking a form of rehabilitation, with an emphasis on the overall benefits for residents and staff, and how in practical terms this could be carried out.

In order for the intervention to be delivered by the caregivers themselves, understanding these concepts, along with managing competing demands, was fundamental in changing caregiver behavior. As one nurse manager asserted:

*I could see the caregivers beginning to work differently to try and be less task orientated or at least talk about it anyway* (Denise, NM, RH3).

Other caregivers described the training sessions as not very useful. They described how on-the-job training provided better learning opportunities to address immediate issues or concerns relating directly to the residents individualised programme:

*Able to talk to you [the researcher] on pressing issues on a daily basis, talk about the practical application of how the goals and the physical activity exercise programme was going to work for my residents* (Irene, CG, RH4).

Enjoying the interaction with the researcher helped them develop a deeper understanding of the principles underlying the intervention:

*We really looked forward to the researcher coming in, you know when you heard her voice you picked up and thought, “oh good, now I can talk to her about Mrs Z who is not really doing the sit to stands very well* (Mary, CG, RH2).
While an apparent attitudinal shift may have occurred and been effective for nurse managers and caregivers, registered nurses were not as engaged. They expressed this in words such as *distancing, not my business,* and *far too busy to give the project much thought.* There was no indication of a willingness to participate at the early implementation phase in either the formal teaching sessions or on the-job-training sessions:

*I didn’t go to the training or meetings I didn’t think it was anything to do with me really and I just never really wanted to bother with it. I had more than enough to do with giving out the pills and dressings and sometimes new admissions* (Clare, RN, RH3).

Combining formal and informal teaching sessions may have contributed to acceptance of the PILS intervention while mainly focusing on the positive aspects at this early stage. This acceptance was reported to have occurred as a result of enhancing staff self-efficacy (aside from the registered nurses), allaying fears, and by relationship building. These may be key factors that support the successful implementation of a physical activity programme in residential care, and will be further explored in the discussion section of this chapter.

### 8.5 Early implementation phase

In contrast to the preparatory phase, where staff preparing for the intervention focused to some extent on the partnership with the researcher, the early implementation phase data analysis reflect the meanings the staff attributed as they commenced delivering the intervention to the residents. What follows is a discussion of the meanings they attributed to the goal setting activity, how they changed the way they worked, and how they felt once they began to practice in a different way. The difficulties attributed to time and residents’ resistance to the intervention also emerged as categories.

#### 8.5.1 Resident goal setting from the perspective of staff

The functional goal set by the residents was to be the key motivator in improving function in the PILS intervention. Staff had positive and negative views on the goals the residents set. Nurse Managers discussed goals as a goal activity:

*It was hard to understand how the goals was really going to work for these older people, especially those who had been in the rest home for some time.*
The staff initially found the whole thing frustrating, and they just saw it being problematic for residents because it was getting in the way of the routine that was established here (Sue, NM, RH5).

This reflects the institutionalisation of the resident, where the routine appears to be more important than the resident centred plan. The registered nurses described the goals as being something that was happening, but had no involvement in supporting the residents towards goal achievement:

I heard her goal was to walk to the gazebo, and she was thrilled when she did. I haven’t talked with her for a month or other than to say hello. I haven’t been down there, haven’t needed to do anything for her (Clare, RN, RH3).

On the other hand, the caregivers described the goals the residents set in a positive manner:

I think the PILS programme has been very helpful for the residents and setting their goals, and having to look forward to it [the goal] every day. We have got a lot better the resident and me (Fine, CG, RH5).

When asked to describe what was different, working together rather than just providing all the hands on cares was identified. Irene added to this:

The exercises that helped them towards the goal are obviously important and that keeps them fit, keeps the circulation going and helps their minds to develop or what ever it does them the world of good (Irene, CG, RH4).

Not all staff felt positive about goals set by residents. A number felt that some goals were unrealistic (as Ann stated in a general comment: ‘off the planet’, while Mary felt goal setting for residents who were cognitively impaired was not appropriate:

A few of them that were with it looked at the goal and did their own exercises, but the ones that couldn’t understand what it was about really didn’t get it (Mary, CG, RH2).

There has been relatively little discussion in the literature about selecting and classifying goals for residents with cognitive impairment. In this study residents with lower cognitive functioning were able to articulate a goal, suggesting that the goal setting activity is understandable even if the semantic term ‘goal’ required further defining for this group:

Yes I do I think the goal is a great idea for those residents with poor memory, you just need to find the right goal for some of them (Nat, CG, RH4).

As residents began to improve in their functional ability (albeit limited at times due to their physical and cognitive impairments), staff confidence and commitment grew,
Chapter 8: Findings, the staff perspective

giving staff a fresh respect for the residents during the early phase of the intervention. Caregivers who were closer to the residents than the registered nurses observed this more clearly when they began to put the intervention into action.

8.5.2 Changing the way they work

‘Feeling different’ is how caregivers described the meaning of changing the way they worked during the early weeks as the ward went ‘live’. Caregivers related how at the beginning they felt little had changed in the ward routine, measured by their ability to assist the first residents with extra exercises with relative ease:

*It didn’t really seem much different to my workload at the beginning. I remember Mrs S and I thought we were a bit special, and it made us feel different somehow* (Mary, CG, RH2).

On the other hand, registered nurses made little reference to this period and commented that “they [the caregivers] just got on with their usual work” and the activity programme “didn’t really interfere with them at all.” (Judith, RN, RH2). From the nurse managers’ perspective, although they were aware of the intervention ‘going live’, they believed the researcher “had everything in hand”. Other than attending the weekly ward meeting, the nurse managers left the caregivers to work out the individual programme with the residents.

During this early implementation phase resident-staff relationships improved as they began to work in a different way:

*I think the PILS programme has been very helpful with the residents, especially setting their goals and having to look forward to it every other day. The relationship between the resident and me is a lot easier which makes me enjoy my job now* (Fine, CG, RH5).

*Well one lady talked about it [the goal] a lot, and the other caregivers talked about it a lot also. Yes, they liked to use the word goal and how they were determined to get to their goal. It was really exciting for us all* (Lynda CG; RH3).

Just as the residents described the monotony of life in residential care in Chapter 5, the comment by Lynda suggests that caregivers also have a monotony of routine. The PILS intervention impacted on this and they enjoyed a bit of variety.
Observing the early benefits and sense of satisfaction that the intervention provided to residents was reported by staff and interpreted as facilitating permission to work in a different way:

Yes, I think that was really good, it gave them something to look forward to and I could see that they got some satisfaction from working towards their goal (Kelsey, CG, RH1).

Having to step back and allow residents to be more involved in their exercise programme was also described as a change to the way they worked. This came at an emotional cost as they struggled with letting the residents do more for themselves. Mary, one of the caregivers observed:

Having to watch them struggle at first, for the first time when they were trying to do the exercises. It was watching them and waiting for something to happen. I knew that in a way the exercises would help them I talked to Kathy [researcher] and she explained it was hard but reassured us that the resident would really move by themselves if we just let them do it (Mary, CG, RH2).

The nurse managers recognised that during the early phase, resistance from the caregivers may have prevented them from assisting the residents, and sought ways to eliminate such obstacles by problem solving issues as they arose. For one nurse manager it was providing simple solutions in the way they structured their day. For example:

I began to think quite creatively, especially at the beginning of ways to get the caregivers in particular to try and think of things in a less task orientated way. I tried to do these at our handover meetings each day. I would say you don’t have to do everything in the morning a shower or bath can be left for the afternoon or it doesn’t matter if Mrs [xx] doesn’t get dressed till after lunch (Linda, NM, RH:5).

8.5.3 Feeling valued and listened to

‘Feeling valued’ emerged as an early implementation theme as caregivers commented on how they valued and enjoyed the way the researcher would seek them out on the ward or at morning tea to talk about the intervention and the individual activities the resident was doing:

I really liked her [the researcher] coming in and asking me how things were going. I might have had some thing that the resident was having problems with around doing the exercises. I could ask her what I should do. We often then went to see the resident together and talk about the problem and work out ways together (Kelsey, CG, RH1).
Being listened to was a key motivator, not only in changing work practices, but also in feeling valued. Another caregiver emphasised the value of having the researcher on site at this early phase. The researcher was seen to support them to change the way they provided care; they talked about the nurse managers having the time to spare, to listen and advise; clearly something that the registered nurse did not provide:

You couldn’t really go and talk to the registered nurse on duty as they were busy doing the pills and dressings, so we really relied on the researcher when she came in to help us sort stuff out. This really helped us at the beginning (Kate, CG, RH3).

Denise, one of the nurse managers, supported this view:

I didn’t seem that as a role I would play but going to the weekly ward meetings in the early days made me aware that I did have to play a role in mentoring the caregivers on the floor (Denise, NM, RH3).

In contrast, caregivers not involved in the intervention held negative or neutral views about PILS. Caregivers in the intervention wings who at prescribed times of day either took residents for a walk outside or helped them with physical activities, such as sit to stands, regarded these tasks as a waste of time, an unexpected finding in this study. One caregiver disclosed:

At the very beginning whether right or wrong, I would come back from the walk with Harry, and I would hear them saying, oh thank god you are back you took a long time. The time factor was a big thing. It made me and the other caregivers on this wing feel like we were being picked on (Irene, CG, RH2).

8.5.4 Finding the time

Time emerged as an overarching theme in the early implementation phase and as the trial proceeded. Decreasing the physical and psychological stress caused by the perceived extra workload for caregivers in this study was one of the main goals of the intervention. As residents became more independent in their activities of daily living, caregivers would gain a release of time from these care giving tasks.
8.5.5 Disturbing the routine

The meaning of time differed at varying stages, as explained in Chapter 5 Roles and Realities and Chapter 7 Residents’ perspectives of PILS. During the early stages ‘finding the time’ was expressed as having two meanings for staff. Firstly, caregivers thought about time in relation to having to reorganise tasks and duties into their daily routine:

Oh my, I thought I will have to rearrange everything. I was thinking, I won’t have time to do it all (Nat, CG, RH4).

Secondly, making time to ‘gear up’ the caregivers in early stages was problematic. Caregivers cited tight schedules as the key reason:

I just couldn’t see how I was going to get all the residents who would want to be doing their exercises in the morning and night how I was going to manage. I already have a tight schedule as it is, couldn’t see how I was going to be up to it all really (Kat, CG, RH3).

Kelsey added:

You also had times when you didn’t have time to do it (Kelsey, CGRH1).

Further quantified by a nurse manager:

The hardest thing was finding the time for her [the researcher] to meet the staff. At the beginning that was the hardest thing. We can’t just sit down at 9am and say we are going to have a meeting now so it was a difficult time getting staff together (Sue, NM, RH5).

8.5.6 Dealing with residents’ resistance

Residents’ resistance emerged as an early stumbling block. Some caregivers talked about this as residents’ unwillingness to do the extra activities, such as walking outside and doing the extra sit to stands, or requesting to be taken by wheelchair to the dining room for meals. This was in contrast to those caregivers who managed to get their residents on board with little effort. This resistance from residents was problematic:

You would get days when the residents didn’t want to do the exercises and got really grumpy. And they would say “I am not going to do it”, so you just have to walk away and know that they were not going to do it on that day (Kate, CG, RH2).
Consequently, these caregivers talked about worrying whether the resident would get grumpy before they had even asked them to do the extra activities:

*Mrs M would forget every time about her exercises and often she said that wasn’t what she wanted to do. It got so bad I didn’t really want to go and ask her (Kelsey, CG, RH1)*.

How caregivers responded and handled this hurdle varied among caregivers. One caregiver personalised their resistance:

*Some of them just don’t want to move, they said they were tired. I say to them look, I work five days a week and I am tired and I am doing all the work you know, you have to get through to them (Kelsey,CG,RH1).*

Caregivers described how they needed to overcome personal feelings of disappointment expressed as a sense of failing the resident. The residents they perceived were failing were described as frailer and having a number of health problems. These residents’ goals tended to be more inwardly focused; for example, being able to get to the toilet on time:

*It makes you feel bad, it makes you feel like you have failed, and I am going through this with little B (resident) at the moment. Sometimes I can get her out and sometimes I can’t (Irene,CG,RH4).*

An important finding in this study was that caregivers, who until recently had provided task orientated care, found working in a new way gave feelings of lack of control and a sense of disappointment when they encountered resistance.

In summary, the staff attributed a series of meanings to the early implementation phase that emerged from the data in a non linear way. The overarching theme and categories were patterns that related to the whole and were thus interrelated. Diagramming a thematic structure offers a visual understanding of the relatedness of the themes to each other and the experience as a whole. The following section describes the effects of PILS on staff who participated in the intervention.

### 8.6 Effects on staff participating in PILS

Having described the preparatory and implementation phase, this section will address the perceptions and experiences of how staff stayed on, or strayed off, track. Staying on track was not a linear process occurring in the same way in each facility. Three
overarching themes emerged from the data that depicted staff viewpoints and behaviours. The data indicated that facilities varied in their views and perceptions. The one consistent report was that during the six month period of the intervention, PILS shaped staff workloads and staff outcomes, and caregivers became more resident focused in the way they delivered care.
Chapter 8: Findings, the staff perspective

Prompting Independent Living Intervention
Staff Perspectives

Preparatory Phase
fears & anxieties
Information sharing
champions of change
building trust
training in a new approach

Sustainability

Effects on Staff
 Resident focused care
 Going the extra mile
 Being adaptable
 Poverty of time
 If I only had more time
 Changing old habits
 Tensions

Staff Outcomes
 Job Satisfaction
 New found confidence
 Work enrichment
 Personal rewards

Ongoing Commitment
Cultural Change
Resistance to ongoing change

Figure 8-2: Diagramatic representation of staff perspectives
8.6.1 Resident focused care

Fitting PILS into the resident’s routine and how caregivers began to provide resident focused care during the ongoing months was a dominant theme. This was identified as one of the most challenging aspects of the intervention. Caregivers, who were already working extremely hard, had to manage an increasing workload as more enrolled residents came onboard.

During very busy times, caregivers talked about having up to five or six of their residents involved in the intervention. Staff at all levels described how they needed to find ways to work in and around the intervention during the six months. It is well documented in Chapter 5 that in order to manage their workloads, caregivers find creative ways to ‘fit’ their workload into the daily eight hour shift. During this period of bedding down the intervention, staff described what did and did not work and how they got around some of these issues. An interesting finding that emerged was that the Promoting Independence Plan (PIP) helped the caregivers stay on track.

8.6.2 The Promoting Independence Plan (PIP)

Staff were asked directly during the interview about their perception of the PIP. The staff described how the Promoting Independence Plan (PIP), discussed more fully in Chapter 3, provided a valued written plan to help staff focus on the individual resident’s exercise activity. Caregivers from participating rest homes referred to the PIP as being helpful and acting as a prompt during the ongoing implementation phase:

It reminded me when I was helping the resident I only had to wash her back and let her do everything else. And then I didn’t even have to wash her back as I had a back scrubber that I gave her (Fine, CG, RH5).

I looked at the PIP, and it reminded me of what I needed to do, it was great as I only had to help get her clothes out. I didn’t have to wash her anymore (Kelsey, CG, RH1).

Over half the caregivers felt the PIP helped them to be firm when encouraging residents to be more independent, particularly when residents were expecting the caregivers to help them with their activities of daily living such as showering:

Especially at the beginning as Mrs X was always used to me washing her back and stuff and then I couldn’t do it so it was easy for me, I said
findings, the staff perspective

remember you do all this now, I just have to be near by in case you need me for support (Fine, CG, RH5).

For managers, it was more a case of familiarity with the PIP, with an emphasis on how the format of the PIP could be integrated into documentation protocols at a ward level:

During the early planning meetings I wanted to find a way that the PIP could be incorporated into the lifestyle plan that each resident was required to have. Actually it was the idea of the goals being integrated into our lifestyle plan that got me interested in the project in the first instance (Denise, NM, RH3).

The majority of registered nurses had little to say about the PIP except that they knew it was developed by the researcher and was what the caregivers referred to on a daily basis when carrying out the individual exercise programme with residents. One exception was Clare:

When I was doing my pill round, I would see the PIP on the wall, that would prompt me to ask the resident if they had done their walk or sit to stands (Clare, RN, RH3).

A finding related to written care plans was that these provided caregivers, in particular, with a visual view of the resident’s goal. Caregivers clearly saw the distinction between the rest home care planning and the more resident-centred goal approach that had been incorporated into the intervention:

The biggest difference I saw I think was that our care plans tend to be nursing focused and, the goals in the PILS they were becoming more resident focused with the resident goals. So Kathy would set the goal with the resident and she did the plan. Harry’s goal was to have morning tea down at the local shopping mall with his son. Whereas our goal would have been that he mobilized safely and independently (Irene, CG, 4).

8.8.3 Going the extra mile

Caregivers described how observing the benefits of the physical activity intervention motivated them to support and assist the residents, prompting a focus on resident centredness. During this time, caregivers also noticed a change in the relationship with their residents:

The relationship between the resident and myself has been a lot easier (Fine, CG, RH5).

Other caregivers described how being more connected changed their caregiving behaviour:
I really saw how the residents that I was helping really become more active and independent. From then on, I just worked around things, and changed the routine around so we could continue with the daily exercises (Nat CG; RH4).

The reciprocity some caregivers received encouraged them to go the extra mile for the residents:

The residents in a way were very supportive, as they knew that the programme would help them. Every time I was feeling low or not feeling 100% in doing the job, they were there to help me and keep me going, and keep me motivated (Fine CG; RH5).

For nurse managers committed to improving quality in their rest homes, going the extra mile meant being passionate and believing in the model of change that the intervention might provide long term:

Yes I was very passionate about the intervention and giving a different focus of care to the residents. I really wanted to change things in the way older people were being cared for in the homes (Judith, NM, RH1).

If the daily routine was disrupted the caregivers did not just forget about the resident; they thought it through and sought ways to go that little bit further:

There was no issues because I would say look if you are not feeling well or up to it there is always tomorrow and we would do an extra lot if they hadn’t done it the day before that’s what I would do (Kath, CG, RH3).

### 8.6.4 Being adaptable

‘Being adaptable’ for a number of caregivers required them to find ways to juggle competing demands. This was generally a self directed process rather than one directed by other staff members. Despite being understaffed on a number of days, caregivers showed some ability to be adaptive.

Caregivers talked about the relentless, demanding work load and how they eventually found ways to help the residents with the exercises. Several examples of finding this window of opportunity illustrate this view:

You know sometimes you can do the exercises after lunch I have plenty of time but in the mornings you don’t really (Kelsey, CG, RH1).

Yes I found I have maybe a ¼ hour window where I do nothing and it’s not always guaranteed to be there all the time but when it is that’s when I do the exercises (Irene, CG, RH4).
Chapter 8: Findings, the staff perspective

Being willing and adaptable were clearly essential on difficult days. It seemed crucial that caregivers learnt these skills in order to sustain the intervention over the six month period. Several caregivers talk about this approach:

At first it did seemed overwhelming, I didn't have a clue what was going on but once I got into it and got into a routine it was okay. On the days that we were short staffed I would get the residents together and get them to do some of the exercises, like the sit to stands together. They didn't mind that sometimes and it was easier for me (Nat, CG, RH4).

Kath, another caregiver, also found she independently went about changing the routine in order to support residents she was caring for:

I just decided that to help the residents (enrolled in PILS), it meant changing different shower times and doing things differently than I usually did things, I really wanted to help the residents as they got better (Kath, CG, RH3).

Caregivers often expressed the need to be mindful of resident's individual needs when delivering the intervention. 'One size didn't fit all' as one caregiver aptly said. Residents might become unwell or less motivated. During such times caregivers negotiated ways around this by compromising and thinking outside the square.

8.6.5 Time

The emergent theme ‘poverty of time’ was made explicit during the ongoing implementation and delivery of the intervention. Without exception, staff participating in the ongoing intervention spoke at length about this issue. Commonly expressed metaphors included: windows of time; time slipped out of line; time getting out of hand; and wasting time. Caregivers, in particular, stated that if they only had more time they would have felt less stressed. The registered nurses gave lack of time as the reason for not getting involved.

8.6.6 Poverty of time

Caregivers had the most to lose by participation in the programme in relation to rhythms, time and routines, as described in Chapter 3. They were closest to the residents and had to learn ways to cope with this disruption to their time. All caregivers described how they felt about this ‘poverty of time’, and explained how they had to deescalate stressors by working in a different way. Some caregivers conquered the time issue at an individual level rather than within the team:
Things were changing all the time; I just had to do things on the spur of the moment sometimes. Let me think, like this morning, I realised I hadn’t got an RN and so this meant making some decision about the residents and how I would do the programme (Kath, CG, RH3).

I was working full time so I could do it later if I was busy; the other caregivers had to leave early so some of their residents would miss out (Kelsey, CG, RH1).

Other caregivers described how they got into the flow of doing things differently by using newly learned problem solving skills to work with residents:

Just getting around my time thing and utilising my time wisely and just knowing when they didn’t want to do the exercises and not to get angry with them, but just go back an hour later and see if they would do them then (Nat, CG, RH4).

You have shown a difference, even if time seems a bit overwhelming. I learnt about the time of the day thing, and you know that you do make a difference (Kelsey, CG, RH1).

In contrast, some caregivers continued to wish they had just a little more time to allocate to PILS. Unexpected events or busier than normal days demonstrated just how finely tuned the days were:

Little things going wrong or something like the report taking longer, just one thing that would slip out of line and throw your whole day out (Nat, CG, RH4).

Yes, I think if we could finish our work the usual caregiving tasks, if our own work is done, then that’s ok but we can’t do it (Kelsey, CG, RH1).

Wishing for more time emerged as a category from the registered nurses’ data. For the most part, the registered nurses spoke of not coming on board with the intervention, although they did suggest they might have a role to play if they had more time. As one registered nurse concluded:

Time is always gone, it was never finished, and there is always something for you to do. Um I think they (the caregivers) have got their set routines and they (the caregivers) think I have got showers etc, really they don’t. They could have missed a shower and it wouldn’t have really mattered. It would have paid them to spend more time on your programme it would have been better than thinking I have to do all the showers (Jane, RN, RH2).

8.6.7 Changing old habits

Working against heavily entrenched work habits was always going to be a challenge during the implementation and ongoing phases of the physical activity programme.
The majority of caregivers described how work habits began to change as they started to do less for residents:

*Before I would have done everything for the resident now I just help get the clothes out of the wardrobe and she does the rest before I would have done everything* (Kath, CG, RH3).

*Really in the end I had more time to spend with my residents and was able to take them on the long walk up the road when the weather was fine. Isn’t it funny I ended up spending much more time with my residents?* (Anne, CG, RH1).

Getting the residents more actively involved in their self cares appeared to have a positive effect for both resident and caregiver:

*I used to wash them myself when I first started in the PILS programme. Then after a while I only washed their backs, but when they got the back scrubbers they wash their own backs* (Irene, CG, RH4).

*Instead of going in, getting them dressed and taking them down to the dining room or lounge, I spent more time with them doing their exercises* (Nat, CG, RH4).

For others their experience was not directed and organized, and they described it as ‘muddling through the day’. Caregivers and nurse managers alike illustrated this and were very frank about how the day might start with one of the residents becoming unwell or a staff member phoning in sick, leaving them to do the best they could on that particular day:

*Like the other day, K phoned in sick and we couldn’t get a replacement that meant there were only 2 of us caregivers to look after 20 residents. It made you just do a few sit to stands with the more active residents and leaving the rest till tomorrow. It was a real messy day* (Mary, CG, RH2).

### 8.6.8 Tensions

As reflected above, tensions did occur on the days when facilities were short staffed or residents became unwell. Emerging from the data and of some surprise, tensions also developed between staff who worked between the intervention and control wings. This continued to the final phases of the intervention; a nurse manager described it as friction:

*You have got that friction with staff. Particularly the caregiver that walked Harry (a resident) up the road. The rest of the staff was thinking she was skiving off because she was off up the road, one on one. And not helping out with the lunches or morning teas. Yes, there was definitely a bit of friction there* (Linda, NM, RH4).
While nurse managers referred to lack of teamwork as friction, caregivers described this as “staff bitching” and “moaning”:

> On one side you have the staff bitching, and you on the other you have Harry wanting to reach his goal, how do you manage the tension? (Irene, CG, RH4).

Residents were also blamed for creating tension:

> I saw that it antagonised some residents. Some [residents] were such strong individuals. You had a collection on this side of the building. They were difficult for staff to try and persuade, to coach and to get them do these things. Some of residents just plain refused and would not do it. They would agree to do it when K [researcher] talked to them, she could persuade most people to do most things but when she left they went back to there old ways (Denise, NM, RH3).

### 8.7 Staff outcomes

The meanings attributed to outcomes that staff felt at a personal level are presented in this section. ‘What’s in it for me?’ focuses on staff behaviours and attitudes as they stayed on track. Research on quality improvement initiatives has shown that group and individual acceptance is imperative to the success of the initiative (Burke, 1982). Individual receptivity to change, a term coined by Garside (1998b), essentially portrays a number of imperatives that are characterised by the ability of individuals to change habits.

The ability of caregivers, and to a lesser extent nurse managers, to change is problematic for a number of reasons, many of which have been explored and made explicit in this thesis. The data showed that caregivers eventually saw what was in it for them and consequently described their job as more satisfying and enjoyable.

#### 8.7.1 Job satisfaction

Caregivers in this study found that less task orientated behaviour increased their overall ability to support the residents in the physical activity programme. The first reported behavioural reaction to the intervention categorised thematically under the heading of staff outcomes was related to job satisfaction. Satisfaction was articulated
by a number of nurse managers while caregivers described this in terms of new found confidence:

> Oh yes, you know the biggest spin off for me was the staff development and their personal development and the way they loved being with the residents. They just loved it (Sue, NM, RH5).

> The impact of PILs on the staff has been very positive, not just the ones involved in the programme but others who have heard about it from varying sources. They have heard it from me in part, but also from caregivers who work for this organisation. They go wow! They are really fired up and very positive (Julie, NM, RH1).

### 8.7.2 New found confidence

One of the more interesting and unexpected findings in the study related to caregiver empowerment. Feeling good about themselves and enjoying their work more increased caregiver’s sense of confidence beyond the six month trial:

> It’s quite interesting, you can stand back now and think that you can do that, which gave me encouragement and empowered me to carry on (Nat, CG, RH4).

> Yes I do feel more confident now, more open to suggestions and also I am making more decisions for my residents (Irene, CG, RH4).

The majority of caregivers felt extremely excited about this new found confidence which subsequently provided a mechanism which allowed them to actively participate in improving care practices. This included reporting residents’ problems more frequently, something observed by several nurse managers:

> I think caregivers are more comfortable in what they say about care stuff, especially the Polynesian staff that tend to be very quiet and don’t say too much, but now they will say things. One in particular has blossomed; you know it’s just wonderful to see some one with potential. She can do anything (Sue, NM, RH5).

> It has made the caregivers more empowered and more involved in the multidisciplinary reviews of the residents. They really know their residents they know their capabilities they feel confident to say yes that’s right and that’s wrong and they have more input into hand overs. Now the caregivers are far more involved and planning care as they know their residents better than we do (Julie, NM, RH1).

### 8.7.3 Work enrichment

Intrinsic motivation has emerged as the degree to which a person wants to work well in his or her job in order to achieve intrinsic satisfaction, a term known as self
fulfillment. Caregivers described how getting on top of the workload provided a sense of self-fulfillment. This job enrichment made the caregivers feel good about themselves:

*It made me feel good about myself and about what I do because I know I am helping them and not just my getting paid for it. I enjoy what I do much more now* (Nat, CG, RH4).

*Seeing the residents’ progress coming through and it made me feel good that I was doing something for them* (Mary, CG, RH2).

Feeling good about themselves proved to be an extra motivation factor for working with the residents:

*Well I felt really proud – because I was the one that more of less drummed it into them, you know I don’t give up so easily so I would say to them don’t give up* (Kath, CG, RH3).

### 8.7.4 Personal rewards

The final emergent category relating to staff outcomes draws together and summarises the unexpected bouquets and rewards staff and residents both received and gave. Fine, a caregiver, describes the personal impact of being part of media attention when a local newspaper published an article about PILS:

*First of all I felt it was one part of a little programme, however I got to go places and people would notice me and I was oops! I am the famous one now. Strangers were talking to me. I meet some people on the way to work and they were running up to me and giving me flowers* (Fine, CG, RH5).

An unexpected bonus for another caregiver was that it allowed her the opportunity to get to know her residents in a more holistic way. This was completely unexpected and added value to her work:

*I got more involved with the residents knowing them individually* (Anne, CG, RH1).

For others an unexpected personal reward took the form of funding for caregivers to attend a Caregivers Conference:

*Some of them went off to the Caregivers Conference and of course the gerontology nurse specialist was part of that and so that gave them (the caregivers) a nice little boost for a while. And a reward for all their hard work* (Denise, NM, RH3).
A final comment from one of the nurse managers concludes the unexpected bonuses and provides a further glimpse into the perceptions of the consequences of being involved in the physical activity intervention:

*I really didn’t think at first it would work but you know I think it is wonderful and I do think it was good for older people* (Sue, NM, RH5).

### 8.8 Sustainability

This final section explores staff behaviours and attitudes that developed as the research progressed to the latter period of the intervention. Patterns and themes emerged from the data that were fundamentally relevant to organisational change in the five facilities, and important given the complexity of trying to change the way staff worked as they struggled against a number of factors, including ‘total institution’ issues. Clearly the change processes are in part orientated to wider facility and organisational issues, having explored in-depth the process of change and meaning of this from an individual level in the previous two sections.

Burke (2002) suggests that the best ways to consider change in an organisation are from three perspectives: individual, group and larger organisational systems. Exploring each level during coding and analysis was a natural progression for the researcher. While it was likely that responses from staff would occur at each level, the researcher was aware that the three levels of understanding are not discrete. Sustainability would require an ongoing commitment.

#### 8.8.1 Ongoing commitment

Nurse Managers described ongoing commitment as being important if they wanted to use the intervention as a way forward in changing the behaviour of staff working in their rest homes. As several nurse managers explained:

*You have to show the passion and be in the driver’s seat. You know, that’s why I attend those meetings. We had to try and get the message across that we were not just going to tweek things at the edges. We were in this for the long term, long after PILS had finished* (Julie, NM, RH1).

*I had such passion and drive; I wanted to keep developing the model and the intervention. By redeveloping all the rest homes into smaller structures, like pods* (Denise, NM, RH3).
Ongoing commitment for caregivers reflected the realisation that they had much to gain for themselves, and also for the residents that they cared for long term:

*I am more like, ah, I don’t have to be shown what to do any more, and you can talk, open up and talk with the residents. I quickly encouraged the residents if they have been unwell to go back to the exercises because I saw the effects of the exercises. This has really got me committed to carrying on* (Kelsey, CG, RH1).

Nurse Managers believed that moving the research based intervention to normal care practice in the facilities would also demonstrate the commitment to a model of care that was more resident centred:

*I believe that it will be of great benefit once we get everyone on the programme. As long as the staff go along with the changes and don’t revert back to old habits. It is much easier to rub someone’s back for them rather that watching them do it. And it is easier all around, and that’s the challenge we have to face. Sure there are other areas that we can change down the track* (Linda, NM, RH2).

Being committed meant having a high level of confidence in oneself and demonstrating this with others involved:

*Telling everyone about the long term goal and vision for the organisation makes people feel something, they feel comfortable and it’s going to be ok* (Denise, NM,RH3).

*This project came just at the right time, and I was here to help to implement it. It may be more successful than other ideas I have been involved in because I really loved the idea and was always positive about it when talking at meetings (Julie, NM, RH1).*

### 8.8.2 Resistance to ongoing change

Against the backdrop of ongoing commitment of staff, tension and resistance also loomed. Resistance was identified as feelings of discomfort which overlapped with the need to have time to get used to the idea:

*The changes, well, with changing staff attitudes not doing things for people and changing attitudes about time management, it was going to be a huge challenge now that the trial has ended. They know now they are not going to have extra staff on board to help them. I think as they get use to change they will continue to flow with less task orientated work (Linda, NM, RH2).*

Contrary to how nurse managers identified the resistance to change, caregivers described that despite struggling at the early implementation phase they no longer wanted to return to care practices of the past:

*I don’t want to go back to my old ways now (Kath, CG,RH3).*
A caregiver working in a different facility described how colleagues’ resistance to continuing the programme isolated her from her colleagues:

*I felt very isolated as I really wanted to continue with the programme, and felt the others just couldn’t be bothered – I felt that this was a burden I was prepared to do it, as I saw the benefits for the residents helping themselves more and getting about* (Kelsey, CG,RH1).

Feeling the burden for this caregiver related to having the new found knowledge and ability to improve residents’ independence by working in a different way; however other staff members were not receptive to this. Being unsupported by her colleagues left her feeling troubled.

In contrast, other individuals believed that sustainability simply would not work because of the lack of ‘buy in’ from the registered nurses, expressing that it would be best to return to the way they worked before:

*I guess I would be much louder in trying to get people involved in the beginning. But I think that the staff really felt very segregated. And instead of feeling special I think they felt put upon and would not change. I certainly saw that with the registered nurse* (Denise, NM, RH3).

*What we got was the staff saying I am just doing what I am normally doing so why should I have to have to think about what I might have to do? And I don’t know if you can get over that, that’s a staffing thing* (Linda, NM,RH2).

### 8.8.3 Cultural change

Cultural change at the behavioural level will have more success initially than changing values or beliefs, because it is easier in relative terms to change and shape. Every long term care facility has an existing culture, expressed in its traditions, style of leadership, social networks, patterns of interaction, relations with the outer community, and use of language. Research has shown that caregivers in a traditional model of care practice often focus on getting the work done, leaving their colleagues to fend for themselves. This study has shown that meeting residents’ personal preferences resulted in, not only a more cooperative way of working with the residents, but a less stressful job. For some of the staff in the study, as they began to change the practices they also showed an ability to adjust, whilst other staff thought that change was all about culture:
It's about cultural norms and the way you work, your attitudes and beliefs. We work in a hierarchical system, but the caregivers think they work in a very flat system and it's quite difficult to work with all that (Denise, NM, RH3).

If you haven’t got someone who shares the vision in the workplace and influences if you just can't make it all happen. I realised this you can’t make any impact (Julie, NM, RH1)

There is more than one way to skin a cat too also experience this (Sue, NM, RH5).

Other staff members, particularly those leading the change process, felt a period of consolidation was required rather than forging ahead with new ideas:

We would like to change further really, but in saying that I would like to maintain the momentum of this now and that is my focus it would be very easy to drop the ball otherwise (Julie, NM, RH1).

The changed conditions need to be reinforced with a process and infrastructure that maintain the new system, a view supported in the current study:

It kind of just evolved, all of a sudden you realise that there has been a change and practicing a change in culture a natural progression its not worked at its evolved (Linda, NM, RH2).

It kind of just evolved all of a sudden you realise that there has been a change and practicing a change in culture a natural progression its not worked at its evolved certainly they prefer that one on one relationship and eventually if the staff stay they will have the same caregiver for six months what ever period of time so its just been a natural revolution and its been very positive. It has been a much more open (Julie, NM, RH1).

8.9 Discussion

This chapter explored the perspectives of caregivers, registered nurses and nurse managers from the five rest homes who participated in a randomised controlled trial of a physical activity intervention to improve residents' function and quality of life. Getting staff to take up new ideas is difficult. Even with well trained staff, working in environments that struggle to provide good quality of care can lead to poor up take of new initiatives such as physical activity or exercise programmes. There is not a clear answer to how quality systems should be developed in residential care to improve health outcomes for residents (Kane & Kane, 1995; Masso & McCarthy, 2009; Parmelee, 2004). Understanding the meanings and behaviours of staff during
the implementation of PILS will provide important insights for future development of such quality improvement initiatives.

Development of innovative models in long term care has been described as having positive and negative implications (Feldman & Kane, 2003). These are related to the ability of both the organisation and staff working within the organisation to adopt the model (Wagner, van der Wal, Groenewegen, & de Bakker, 2001). The characteristics of the innovation itself, the channels through which information about the innovation is communicated, and the social system in which adoption occurs, are all necessary factors that ensure success in innovations (Masso & McCarthy, 2009; Rogers, 1995). The intervention development in PILS seemed paradoxical; on the one hand the intervention appeared to follow step by step progression that included meetings, training, enrolment of the residents, formulating the goal and development of the individualised exercise programme. The process for all intents and purposes appeared to be linear.

However, what actually happened was anything but linear, and clearly the start up phase was messy. Analysis of staff interviews revealed that the relationship did not follow a sequential line: things did not always proceed exactly as planned, reflecting views that people do things their own way, in their own time and not always according to the ‘set’ plan (Burke, 2002). The key findings of staff experiences of participating in PILS are discussed under the following headings: Factors linked to success of the PILS intervention; Barriers to overcome; Unexpected hindrance along the way; and Reflections on sustainability (noting that PILS was implemented as a funded study with a defined end point).

8.9.1 Factors linked to success of the PILS intervention

One of the key characteristics of the preparatory and early implementation phase was the level of ‘buy-in’ that was achieved with the other staffing groups. This appeared to be incremental; the steps taken facilitated a general agreement that this was a good idea in principal. There is an understanding that transference of knowledge needs to be gradual during the implementation of quality improvements in long term care (Garside, 1998). Morris (1999) aptly terms this period of dissemination the time to
‘gear up staff’ as you prepare them for both philosophical and practical change in care practices.

The transference of knowledge from formal teaching sessions to the practical application of the intervention demonstrated an effective way to ensure implementation processes were gradual (Fiatorone et al., 1994; Morris et al., 1999). This included the benefit of incrementally enrolling residents onto the programme, which enabled a gradual distancing of the researcher in the final three months of the trial. The goal had been to develop an organisational structure to support staff to shift away from a task focused care delivery system to an individualised care delivery system, using the physical activity programme to facilitate this.

The predominant voices emerging from the thematic analysis were those of the caregivers. This was not surprising given that caregivers provide the majority of direct care to residents and were directly responsible for supporting residents in the intervention. For the majority of caregivers during the early phases, work practices changed with residents, providing the mechanism for supporting the exercise activities.

Recent studies have suggested that practical learning, similar to that provided in PILS, is more effective and has more longevity than other methods of learning, particularly for caregivers (Burgio & Burgio, 1990; Stone & Wiener, 2001). The effects of mandated education and research based training for interventions for dementia care has been shown to be effective in one study (Proctor, Burns, Powell, & Tarrier, 1999). This intervention provided an outreach hospital team to deliver training in care planning skills and behavioural training for complex patients to care staff in 12 nursing homes in the UK. The results of this study showed a difference in depression but no difference for behaviour or activities of daily living following the six month intervention (Proctor et al., 1999). As Kramer and Smith (2000) noted, relatively few studies have attempted to assess the effectiveness of nursing assistant training programs in increasing the participants’ knowledge and improving the care they give to nursing home residents. Only one of these studies showed improvement in resident care and caregiver behaviour. They found that a quality improvement
initiative was more effective when paired with effective supervision and support systems (Beck et al., 1999).

Effective supervision and coaching in PILS was an important part of ensuring caregivers understood the programme and how to deliver it effectively. To some extent, this contributed to the successful implementation of the PILS innovation during the early phase. Regular monitoring and coaching by the researcher, involving advice and practical support, assisted residential care staff in mastering the delivery of the intervention to residents. An early task in PILS was to give advice on strategies associated with organising work in a different way, in order to overcome caregivers’ feelings of insurmountable pressure. Well organised work is associated with a decrease in work pressure and work load. Other studies support the findings in this study that coaching and supporting caregivers to firstly master and secondly incorporate new procedures into daily work will identify and overcome barriers to providing quality care (Hill Simonton Bell, 1998; Shemansky, 1998).

A successful trial by Blair (1999) tested an intervention that included mutual goal setting combined with behavioural modification to reduce physical dependency in nursing home residents. Behaviour modification techniques taught to caregivers by registered nurses encouraged residents to be independent in self care activities that included activities of daily living such as dressing, shaving, bathing. William (1996) found that relationships between coach and care assistant developed and thrived when care assistants knew they were appreciated and understood, and that someone was supporting them during the process. Burgio et al.’s (1994) study demonstrated that when care assistants were taught to minimise residents’ urinary incontinence through prompted voiding, monitoring and coaching by specially trained nurse supervisors built into the programme was more effective. The intervention had a positive effect on care assistants’ behaviour and residents’ continence rates, both of which were maintained over time. The current study affirms that the support provided to caregivers by experienced health professionals was essential to the ongoing implementation of a physical activity programme in residential care.
While continuing to implement the intervention caregivers demonstrated their ability
to problem-solve as impediments got in the way of promoting independence for
residents. This finding relating to active problem-solving by caregivers conflicts with
recent evidence suggesting that caregivers lack the ability to problem solve (Bonder,
Martin, & Miracle, 2001). This has been considered contextually as a skill that
caregivers are generally not capable of. Bonder et al. (2001) state it is unclear whether
caregivers can be taught to be open minded, but many of the caregivers participating
in PILS clearly demonstrated this ability and reported increased confidence and
empowerment as a result.

In contrast, Eaton’s (2000) research linking quality of care with long term care
human resource management found that caregivers benefitted from being taught
adaptability skills, and not only did it improve overall resident satisfaction but also
improved staff morale and satisfaction. Constructs of a cognitive nature which have
shaped habitual thinking about ageing in residential care facilities were first
challenged by Langer and Rodin’s (1976) quasi-experimental research in the early
1970s. Different paradigms of care which have evolved from this classic study are
hard to define precisely, but a fundamental change occurred in the way daily work
and organisational philosophies were organised, resulting in a positive work
environment (Langer & Rodin, 1976).

Support in the form of a champion fell to the nurse managers in PILS in the first
instance; from an organisational point of view, in hierarchical organisations this
appeared to be entirely appropriate. However, due to the heavy workloads of these
managers their ‘championing’ the programme was less evident in the latter part of the
intervention and they relied on the researcher as the champion on the ward. This lack
of internal support may well have contributed to the apparent tensions that waxed
and waned throughout the trial. Empirical evidence has shown several factors are
positively associated with the provision of rehabilitation in long term care facilities
(Kochersberger, Hielema, & Westland, 1994). Firstly, success is independent of the
number of staff employed in the facilities and secondly, facility nurse managers who
value and champion the purpose of rehabilitation to restore or maintain function of
the residents in their care is an important factor (Kochersberger et al., 1994; Mac
Pherson, 2006). Congruence with these findings can be substantiated from the inductive analysis of interviews with the registered nurses participating in PILS.

The present study demonstrates that caregivers gained confidence with these new found skills, which they attributed to actively contributing to the modification of residents’ exercise programme (PIP). This not only benefited caregivers’ job satisfaction and enjoyment of work, but was shown to promote personal autonomy for the residents in PILS. These behaviours established relationships between residents and caregivers that enhanced this changing behaviour. Other nursing home studies have shown that when caregivers work in a primary nursing care model during the implementation of quality improvement initiatives it provides a platform for a more resident centred approach to care (Kane, 2001). Furthermore, an association was found between long term care facilities with a more resident-centred care model with less staff burnout and reduced turnover being observed amongst nursing assistants (Cohen-Mansfield, 1997; Streit & Brannon, 1994). Although staff turnover was not recorded during this trial, future studies would benefit from capturing this information. An alternative explanation is that by providing on-the-job training the caregivers gained increased self esteem, self efficacy, and motivation. In a recent meta analysis of training research, self efficacy was a predicator of training motivation and training outcomes. Employees with high self efficacy more effectively sought and utilised feedback from their seniors and peers to improve their role clarity and job performance (Colquitt, LePine, & Noe, 2000). Valuing and respecting each other, as opposed to having negative attitudes, resulted in stronger, more positive relationships between staff and residents in PILS. This suggests that quality of care improved when caregivers were empowered to actively participate in the development and review of resident care plans, the scheduling of daily routine, and when they were provided with good leadership (Yeats, Cready, Ray, DeWitt, & Queen, 2004).

Staff provided feedback that suggested being valued was key to progressing the intervention. Feeling valued was important to residents, nurse managers and families, supporting the view that feedback is an essential component in successfully implementing a physical activity invention in residential care. A randomised trial
providing feedback on quality information to staff in 60 Canadian nursing homes resulted in performance changes and improvement in quality indicators on falls and constipation (Mohide, Tugwell, & Caulfield, 1988). While Rantz et al. (1996) found that comparative performance feedback alone was not enough to improve resident outcomes, additional intensive support from a gerontology nurse specialist was able to significantly effect change in clinical practice and resulted in improved resident outcomes. The PILS had a gerontology specialist nurse who attempted to engage with staff at all levels, but it is possible this was not enough to increase outcomes for everyone.

Being motivated by observing residents’ gains changed caregivers’ beliefs in themselves and what they could achieve. Staff struggled at times to stay motivated and accepted that when work commitments became overwhelming, residents who were more dependent would miss out. This finding is supported by Vroom (1964), who found the degree of performance affects motivation. Research has shown that a person will be motivated to perform effectively when effective performance is consistent with his own beliefs and opinions. Mc Gilton’s (2002) systematic review found that stability of care benefited residents by improving physical activity and quality of life, and also had an effect on staff. Overall staff showed a decrease in job related stress levels, improved awareness of the work environment, and had closer relationship with residents. Caregivers experienced similar effects from being involved with PILS.

A study undertaken in long term care facilities in the Netherlands found contrary results; no change took place with either intrinsic work motivation or job satisfaction following the evaluation of a new resident-centred programme. The reasons were complex, including study design and inappropriate outcome measures which were not sensitive enough to capture the changes (Berkhout, 2000). Measuring degrees of motivation experienced during implementing of new trials in long term care facilities will provide important information for health planners and researchers in regard to best practice motivational techniques.
Being committed to PILS increased job satisfaction especially for caregivers, as portrayed in their narratives. A recent study by Chou et al. (2002) examined predictors of organisational commitment from data provided by 610 nursing home staff and 373 low level care homes members in 70 facilities, using self-administered questionnaires. The results of this study showed that organisational culture, job satisfaction and education were strong predictors of commitment. Higher levels of commitment were associated with greater job satisfaction.

Other studies have found similar results: Irvine and Evans (1995) found work content and work environment were more strongly associated with job satisfaction than economic variables, while Moyle (2003) found satisfaction was linked to workplace flexibility, residents, team environment and better resident care.

A new found energy in caregivers and several nurse managers in PILS appeared to flourish with increasing job satisfaction. This sense of passion and commitment has been described in the literature as professional vitality (Burke, 2002). If this vitality is conducted in a positive manner, and provided by the team leader with a high level of confidence, mutual support and enjoyment, this will teach others the same spirit, vitality and sense of mission. Becoming more involved in the intervention not only provided satisfaction but increased the caregivers’ commitment and professional vitality to change their work practices. Burke (1982) found that the degree to which people are committed to innovation is greatly dependent on the degree of involvement in the innovation.

During the six month intervention period caregivers reported how they organized their time with the residents in a different manner, allowing more quality time with them despite the fact that some residents were becoming more independent. Working in a more resident centred manner has been shown to reduce unanticipated interruptions (Bowers et al., 2001). Caregivers who were able to organise workloads around residents found they were able to talk to residents while completing work, increasing interaction time which they valued, while caregivers who organized themselves by task only spent less time interacting with individual residents, spending valuable time travelling between tasks (Bowers et al., 2000).
8.9.2 Barriers to overcome

An identified barrier through the thesis is that of time as a commodity, described by staff as getting tasks completed on time for residents who have time on their hands. In Chapter 5 and Chapter 7 residents describe how staff could not always give them the time to assist with the physical activities. Time as a barrier was reinforced in this chapter. The tasks and routines normally undertaken by staff emerged as an initial barrier in the early phase but to a lesser extent as the intervention progressed, becoming problematic only when short staffed or residents became unwell. This reinforces the pre-eminence of routines and anxieties about upsetting the routines and suggests a finely balanced staff resource. Evident in this study, being adaptable in time management was associated with positive behavioural changes for the caregivers but not the registered nurses. Registered nursing time was precious. It has been shown that registered nurses spent on average 7 to 8 minutes per shift on each resident, while the rest of the time is taken up with administrative duties (Eaton, 2000). Similar results were shown in the workforce survey on disability support services in New Zealand (Parsons & Dixon, 2004).

The value placed on time is so strong that it has been described as a “sacred commodity” (Carstensen, Isaacowitz, & Charles, 1999). Time is not just a tracking tool, it is a commodity that can be wasted, conserved or correctly used. The registered nurses in this study transmitted this value of time to the caregivers via the medical model which shapes the nursing profession (Anderson & McDaniel, 1999). Alternatively this value of time may have been driven by residential care business models currently in operation (Eaton, 2000). Consequently the registered nurses strongly influenced caregivers’ perceptions of rushing through the shift in order to complete the daily tasks, rarely considering that the intervention required both support and assistance. For the registered nurses in this study, nursing tasks such as dispensing medication or wound care prevented them from participating other than having a brief glance at the physical activity intervention.

8.9.3 Unexpected hindrance

A negative outcome of this study was the inability to build teams. Teamwork appeared ad hoc at best. Staff made reference to teamwork when in many instances
they were merely talking about certain members of staff, not an enhanced team approach. Wilson and Dawson (1989) found a connection between support groups for nursing assistants and resident outcomes. Nursing assistants in 16 facilities participated in support groups for eight months, discussing teamwork and how to improve communication. Overall participation in these groups helped caregivers to work better in a team and learn from one another, developing new skills of coping, communication and problem solving. The lack of teamwork in PILS had an impact on the ability of the intervention to reach the more frail and dependent residents. Bookvar et al. (2000) found teams comprising of caregivers, registered nurses and nurse managers who worked in long term care who rarely shared information freely, consequently developed very different ideas about how a resident was managing generally.

Trying to change individual and overall group behaviour within the intervention wing while excluding those staff working in control wings created attitudes of resistance, fear and disturbed interpersonal communication with the control staff. Other research has shown that where individuals begin to change behaviours or attitude without the group the individual belongs to similarly changing, he or she will probably come under pressure to get back into line (Burke, 1982). This is illustrated in PILS, when caregivers felt the pressure to get back into line from colleagues in control wings; however their commitment to residents’ goals and support from the researcher prevented this.

Decisions to participate in PILS were ultimately made at a senior level, with very little consultation with other staff, a top down decision making process. Traditionally in hierarchical organisations decision making is organised from the top down. Other studies in long term care have also found that decisions tend to be made at a senior level then the idea is imposed on the rest of the staff (Kane & Kane, 1987). Evidence suggests that this is just the opposite of how things should be done when wanting buy-in to a new idea or project (Mittal et al., 2005). In organisations that have a top down bottom up approach, change management can have a long term effect (Cummings & Huse, 1989; Hackman & Oldham, 1980).
The actions of individuals, including their attitudes, motives and values, has to be the central focus of the change process to actually embed the changes effectively (Berkhout, 2000). Involving staff earlier rather than later would appear to have been a sensible solution. Although in hindsight the approach used may not have been ideal, staff attitudes to the programme changed, reflecting the development of a congruent picture. The education and information assisted in allowing understanding of the underlying principles of physical activity and the ability to increase function in frail older people. This understanding was important to determine as clearly as possible how ready people in the organization were to accept and implement the intervention. Several other studies have demonstrated the effectiveness of this approach when implementing physical activity interventions in residential care (Fiatorone et al., 1994; Morris et al., 1999). Staff involved in PILS became motivated and willing to change when they understood that the change would lead to some valued reward, and staff believed that the efforts of improving function and independence of the residents would ultimately reduce their workload.

Having everyone engaged was considered fundamental in building good working relationships, including building trust during the implementation phase, and although this appeared to occur at most staffing levels, some misunderstanding or lack of trust was also noted. In part this was interpreted as a symptom of poor organisational communication, although the literature does suggest that underlying hidden assumptions in groups such as those working in health care resist change if the group structure, social norms or power base is affected. ‘Can’t change’ blockages often centre on lack of resources or power (Garside, 1998a). It is likely that staff in PILS held similar views when, for example, promised increased staffing levels did not eventuate.

The inability and difficulties of engaging the registered nurses in PILS had a negative impact on the overall intervention. It seems that communication and training provided to the registered nurses in the participating facilities were neither appropriate nor sufficient. There are a number of examples in scholarly literature as to why failings occur when implementing new ways of working (Peters & Waterman, 1982). For example, individuals involved in new ways of doing often have different
ways of understanding, and it may be that insufficient account was taken of registered nurses’ views.

Just as goal setting was a new experience for residents it was also an entirely new experience for most staff. PILS provides new evidence around goal setting. Seldom have studies relating to the effects of goal setting on residents been reported in the literature and was a novel component of this trial. The goal setting task was mostly viewed positively. Goals set by cognitively impaired residents were problematic for staff in that the resident had trouble remembering the goal and, perhaps even more importantly, why they had to do repetitive exercises such as sit to stands a number of times. Resistance from these individuals created some barriers between caregivers delivering the intervention and the older person.

The literature to date has shown that older people with memory loss can set goals even though goals may be less clear and less well articulated (Rockwood, Graham, & Fay, 2002). It is finding the right goal that is important. It may have been that residents with cognitive impairment enrolled in PILS should have been approached in a different way to facilitate goal setting. Research has shown that older adults with cognitive impairment can participate in rehabilitation and structured exercise programmes to improve function, including residential care participants, but the data are not strong. For example Tappen (1994) (n 71) reported that a 20 week focused functional skills intervention demonstrated improvement on an ADL scale, while Pomeroy (1993) undertook a small cross over study of six weeks of physiotherapy intervention on a sample of 24 and found it difficult to draw conclusions because of the drop out rate. Neither of these studies described goal setting as part of the intervention.

8.9.4 Reflections on sustainability

Although interviews with staff were undertaken within a month of completing the intervention, reports of continuation of PILS post research was of interest to the researcher. Did the transference of PILS delivered as real world research continue to provide sufficient impetus for staff to continue to set goals with residents and develop care plans that reflected repetitive ADL activities? Commitment meant
sustainability for the PILS nurse managers. The association of commitment and PILS equated to the ability to continue the intervention in a different way by providing a resident centred model of care that included the principles of PILS. Keeping the vision and mission central to this commitment has also been linked with cultural change (Hollinger-Smith, Holmes, O'Sullivan, & Ortigara, 2003). Other studies have stated that repeating the message is essential in change management interlinked with cultural change (Gardner, 1995).

What was not known prior to this research was whether usual care staff could deliver an intervention that may benefit frail residents in rest homes, combined with organisational processes to support continuation of the initiative. Recent work in Veterans Health Administration System in the USA implemented successful quality improvements following three elements: cultural norms and values, capacity and supportive infrastructures (Noelker & Harel, 2001). It is unclear if all three factors were successfully embedded in the five rest homes enrolled in PILS. Organisationally the staff and residents’ interviews have identified factors that did and did not work when implementing PILS at an individual level and organisational level. One element that has been identified is lack of influences staff had to influence some of the on residents. In summary, from the staff perspective PILS is an acceptable intervention for improving residents’ function and quality of life. This study did not set out to make changes across all the organisational systems in the facilities; however, it did influence the social aspects of the change process including the ‘how’ of the implementation of PILS and the conditions that impacted on staff involved in PILS. Issues have been identified in this chapter that would guide future studies and implementations of quality improvement initiatives in residential care.
Chapter 9: Discussion and conclusions

9.1 Introduction

This study evaluated whether a programme involving individualized, repetitive activities of daily living activity improved health status, life satisfaction and quality of life for older people living in residential care. Implications of the findings of the study with residents and staff, one quantitative and the other qualitative, are the focus of this chapter. First the quantitative results, reported in Chapter 6, are discussed. Then, based on the qualitative work, the acceptability of the intervention from those involved is discussed. Finally the difficulties of implementing a quality improvement initiative, including cultural factors, from a research perspective are explained, and the implication for clinical practice and future research implications are explored.

9.2 Intervention and trial design

Controlled trials of physical activity interventions to improve function in residential care settings in New Zealand are scarce. This thesis tested two specific questions:

- Can/does a functionally based physical activity programme improve function and quality of life for older people living in residential care?
- Can usual staff in the care facilities implement the programme as part of the overall daily routine of an older person?

These questions were examined in the context of the rest home environment (low level dependency residential aged care).

Residential care presents a unique environment of a ‘community’ of frail older people in regular interaction with (mainly unregulated caregiver) staff, and both must be taken into account when designing interventions and considering evidence. Several studies that tested resistive and strength based exercise programmes involving staff or visiting exercise specialists have shown promise (Fiatorone et al., 1994; Sauvage et al., 1992). These supervised group based programmes were not sustained following a
set period of 8 weeks suggesting duration of exercise programmes need to be a longer to sustain effect (Meuleman et al., 2000). Vigorous exercises are not appealing to frail residents and ways to improve uptake of physical activity to improve function is worthy of research (Fiatarone-Singh & Mayer, 2002; King, 2001). This study provides further insight into what might be effective and acceptable to both residents and staff in residential care services.

The trial reported in this thesis is (to the researcher’s knowledge) unique in that it set out to test an intervention that used functional activities of daily living as the exercise conduit, and goal setting as the key motivator, and showed some temporary improvements in health related quality of life. Another trial to demonstrate improvements randomised the residents (408) of six nursing homes to one of two interventions: resistive exercise using weights, or nursing rehabilitation, or a control group. After 10 months residents in both intervention arms had significantly less decline in activities of daily living function compared with control homes (Morris et al., 1999). Other trials of successful physical activity interventions in residential care have been group based exercise programmes (Faber et al., 2006; Lazowski et al., 1999; Schnelle et al., 2002; Schnelle et al., 1995), while Choi (2005). found that Tai Chi increased walk speed.

In the present study, randomising by wings (intervention and control in a single facility) rather than by rest homes had the potential for control groups to be exposed to the interventions inadvertently, thus lessening the measurable effect. This contamination effect can mean that the study underestimates the true effect of an intervention. In PILS contamination is quite likely to have occurred due to lack of close supervision, meaning that the programme may have been more successful than if administered in a different trial setting, i.e. cluster randomization, where the whole home is randomized, and thereby minimizing contact between intervention and control residents. The quantitative results of this trial do show that the intervention had promise and this is backed up by the qualitative evaluation.

PILS improved SF-36 physical component scores but not physical performance. Self reported heath status measured by the SF-36 was positively impacted by the
intervention, at least in the short term (three months); however the perception of change in health was not evident at six months. This finding could be interpreted as residents who participated in the PILS perceived an improvement in their health. The control group also appeared to increase their self reported health status between three and six months, and furthermore, control group residents were observed participating in walking activities with the intervention group. This may have significantly influenced the control groups’ own level of function and well-being, thereby reducing the chance of observing an intervention effect. To avoid the pitfalls associated with future PILS trials, where activities programmes are delivered by staff in facilities, it would be better conducted as a cluster randomisation with facilities rather than sections of facilities being randomised.

Demographic characteristics of the sample enrolled for this trial were largely representative of both intervention and control groups. A total of 149 residents enrolled in the PILS representing a response rate of 85%. The main demographic variables did not differ between groups Chapter 6. Those who refused to participate may have been the residents who could have benefitted the most from the intervention. In other studies non-participants in residential care were found either to be unwell or possibly depressed. Some selection bias may be present as a consequence of a lower response rate then desirable. Finding ways to recruit these non-participants may be an important research question when designing future physical activity trials (Nesselroade, 1989).

9.3 Trial results

The level of engagement in the trial was reasonably good in that most residents (n=73) set a goal and almost all participated in the repetitive activities of daily living programme. The goal setting was a novel component of the intervention. Only a few other studies in residential care have used goal setting, a key principle of rehabilitation which set goals as the gold standard. The studies that utilized goals as part of the intervention were generally staff driven goals rather than resident centred goals. (Blair, 1999; Fiatorone et al., 1994). The resident goals in PILS were both resident centred and functional. Just over half the residents achieved their goal during
Chapter 9: Discussion and conclusions

the six months. Goals set were variable and included functional activities such as walking to the toilet independently, or social activities such as visiting family and friends or gardening. It was not surprising that goal achievement did not occur with all residents, and this study demonstrated the difficulties that both staff and residents experienced during the uptake of the individualised programme. Goals may have taken longer to achieve than six months for the frailer group and those with moderate cognitive impairment goal setting may need to be approached in an alternative manner.

Goal setting was a new experience for many of the residents, for the frailer older person and those with cognitive impairment. Having to rely on staff to assist with the exercise programme was problematic, both residents and staff described staff shortages or lacking of time being the prime causes. Furthermore the ability to attend a community social goal may have been restricted by limitations to transport. Goals set around the facility may have been more sustainable. Measuring goal progress and goal attainment in a more methodical may have provided evidence if goal setting acts as a moderator for older frail people residing in residential care. A validated outcome measure such as the goal attainment scale may have provided are more objective evaluation of the effect of PILS, a goal focused intervention (Kiresuk & Sherman, 1968). For example, Blair used the goal attainment follow-up guide; a domain of the goal attainment scale to evaluate resident’s goal achievement in a trial to promote self cares. In this trial goals were set by the staff and showed goal attainment was more effective in group one that comprised staff training and activities of daily living goals set by staff than group 2 that comprised just goal setting while group 3 were provided with usual cares (Blair et al., 1996)

* A priori hypotheses suggested that the intervention would increase walking distances. Other studies had shown that walking distances could be increased in frail older people (Brown et al., 2004; Choi et al., 2005; Rosendahl & Lindelof, 2006; Schnelle et al., 2002) yet no significant effect was found for physical performance in this study. Of interest two studies tested the effect of exercise utilising leisure activities rather than prescribed exercises; Brown incorporated indoor gardening while Choi used sun style Tai Chi. A number of trials have had no effect on improving walking distance
(Alessi et al., 1999; Cott et al., 2002; Crilly et al., 1989). Meuleman (2000) also found no effect for on walking distance for the very frail participants in a moderate intensity exercise programme. The functional exercises that PILS focused on may have required a complex interplay of cognitive, perceptual and motor function that are integral components when performing activities of daily living tasks (Baltes, 1988). These functions were incorporated into PILS physical activity programme with an anticipated increased in mobility. However for an improvement in the functional activities, the programmes may have needed to require residents to practice walking much further distances than prescribed. A different trial of testing the effect of a functional activity exercise programme against resistive exercises for community dwelling older people found he functional exercises participants improved significantly more in mobility and overall function than those just involved with just resistive exercises (de Vreede et al., 2004).

There are several reasons in addition to contamination that might explain the lack of sustained positive benefit from the current trial. Firstly, it is possible that the pragmatic design of the programme compromised the effectiveness of the exercise programme by relying on usual care staff to deliver the intervention, secondly the level of supervision was minimised so that this programme could be easily incorporated into current caregivers workload, and thus the supervision of the exercises may have been inadequate. The duration of treatment and level of supervision were minimised so that this programme could be easily incorporated into the residential facilities usual routine. However, it is possible that this approach provided an inadequate dose of exercise to achieve effective gains in physical performance.

Although the exercises used in PILS followed the principles of resistive, strength and balance exercises, most published successful exercise programmes in residential care tended to be of higher intensity and to be delivered in groups. Intensive interventions tend to have poor sustainability and a number of authors have recommended testing lower intensity programmes (Fiatarone-Singh & Mayer, 2002). PILS adapted this recommendation but in doing so was unable to show a sustained effect. As PILS was
acceptable to the residents (see below), the activity prescription may require redesign to deliver a higher dose of activity to have a discernible effect. Recent studies have shown that frail older people can experience modest but significant improvements in function if exercise is undertaken for longer durations (Gill 2006) It is recommended that future trials test interventions of longer duration.

A recent systematic review reporting on the effectiveness of rehabilitation intervention in long term care concluded that for frail dependent older people only individualised intensive exercise sessions will make a difference in physical performance (Forster et al., 2008). Exercise can cause positive physical adaptation in older people, but measuring physical performance when designing physical activity interventions for residential facilities is challenging. The sensitivity of current physical performance outcome measures are possibly inappropriate for frail older people participating in physical activity interventions and therefore showing a change over time is difficult (Thomas et al., 2007).

In contrast to the quantitative trial results, the qualitative study showed that the activity programme had a profound impact. The qualitative analysis of semi-structured interviews with residents and staff established that PILS was acceptable and feasible. A number of the residents had ownership and initiated activities in order to reach their functional goal. We have established that goal setting was an enjoyable activity and established factors that influence quality of life in older people residing in rest homes. Chapter seven outlines these in detail. The functional activity programme not only created the opportunity for increased physical activity, but also gave frail older people a new-found purpose in life. The benefits of the perceived improved functional status promoted the residents’ perceptions of autonomy, independence and improved quality of life.

The results of this study provide important insights into what may motivate residents to start and continue with rehabilitation and exercise programmes. How residents perceived quality of life is of particular relevance, and how they perceive quality of life is quite different from how others perceive it, such as family and care-givers. With this study being one of the few physical activity intervention trails that has
gathered data directly from residents, the importance of capturing subjective perceptions as well as objective measures when testing new interventions was highlighted (Masso & McCarthy, 2009). The residents’ narratives implied that quality of life as a concept is broad-ranging and wider than any measurable physical function benefits of participation in an exercise programme. In other words, there may be benefits of participation even in the absence of demonstrable fitness gains.

An important subgroup in this study were residents who were disadvantaged because of their inability to self-initiate actions. Two specific groups were identified: residents with high dependency needs; and residents who were less cognitively intact. These two groups potentially missed out in fully participating in their prescribed programme because of their reliance on others. Clearly it is imperative that health professionals work with individual resident consistently in order to establish a successful partnership in exercise programme, such as PILS. Targeting interventions to residents that can best benefit from them may well be important in the future if resources are scarce.

The special knowledge gained by both resident and caregivers and the roles they played enhanced perceptual congruence. Perceptual congruence has been defined by Secrest as the overall satisfaction, growth and development that individuals achieve when improving overall outcomes (Secrest et al., 2005). In this study perceptual congruence occurred once residents’ goals were established and the means to achieve them negotiated between resident and staff which in turn strengthened the staff-resident relationship. Furthermore, PILS enhanced reciprocity, that is the interaction between staff and residents based on genuine exchange of feelings and experiences which provided a space to share meanings and understandings while delivering the intervention (Nolan & Grant, 1993).

Pragmatically the delivery of the intervention was feasible for caregivers who essentially delivered the intervention under the guidance of the researcher and nurse managers. However, this study demonstrated that implementation was often constrained by institutional issues and the degree of engagement of other staff. Periodically institutional issues, such as a task oriented focus rather than a resident-
centred focus, limited implementation. Lack of engagement of the registered nurses in particular led to caregivers experiencing high levels of frustration. Despite these difficulties, a positive effect on caregiver’s job satisfaction and self-esteem was found in the qualitative interviews. Satisfaction in working in a different way provided a confidence that facilitated these individuals to contribute as effective team members. Empowering caregivers in their workplace created opportunities to actively participate in decision making in ongoing residents' cares. This finding differs from other studies that showed delegating responsibility to caregivers is often difficult to realise due to established hierarchal positions (Bowers & Becker, 1992). In this respect, Bowers argues that, based on their hierarchal position, nurse managers and registered nurses always maintain responsibility and hence decision making power (Bowers & Becker, 1992; Jervis, 2002). On-the-job-training and ‘learning by doing’ appeared to be an important factor that contributed to the successful change practices in several participating rest homes.

The qualitative study shows that there was change in caregiver attitudes and practice and that some residents perceived positive change as a result of the programme. This was not reflected in the qualitative results undertaken to assess for change.

### 9.4 Variability between homes

The variability among the five rest homes showed differences in several areas, firstly in the way nurse managers kept staff on track, and secondly in communication. The rest homes that established good communication and held regular ward review meetings appeared to be the more successful. In contrast, homes that had less buy-in at the starting phased appeared to default to usual practice more quickly, primarily due to poor leadership or lack of a champion.

The presence of a designated ‘champion’ nominated by each facility may have provided the essential leadership and improved the penetration of the intervention to the extent that an overall effect could have been shown in the participating residents. These champions or facilitators as described in the literature may have facilitated bedding in the intervention more effectively and prevented the ‘yours, not ours’
mentality that permeated, and furthermore may have been a more efficient approach to achieve the desired change in attitude (Harvey & Kitson, 1996). Health systems term facilitators as individuals who make things easier, encourage others and promote action during a process of change (Harvey & Kitson, 1996). In a study exploring the implementation of evidenced based practice in long term care facilities the receptiveness of the implementation varied between the facilities involved. The facility that had the most successful implementation attributed this to providing staff with good information about the initiative coupled with a strong, appropriate facilitator (Harvey & Kitson, 1996).

The results from the interviews indicated the presences of distracting factors that negatively impacted on the implementation of PILS. In particular, training did not seem supportive enough for the registered nurses to change their practice and the pressure on ‘time’ was a constant distracting factor. By itself, PILS was not able to influence registered nurses to either support or engage fully in this project, a consistent theme described in other long term care studies involving registered nurses (Anderson & McDaniel, 1999). Interventions involving registered nurses will require strategies to create new time, e.g. by redesigning work responsibilities, so greater engagement can occur with this group of health professionals.

Improving residents’ records of compliance regarding both daily dose and type of exercises would have provided additional information about the residents who were more compliant, thereby enabling better targeting of the intervention. The quality of the daily compliance recording was not acceptable, with several rest homes refusing to record, while compliance records in the other facilities were patchy. It is unclear how improvement in compliant recording can occur due to current time constraints. Several studies reported poor compliance effecting adversely on the outcomes Crilly (1989), while compliance recording has been successful when noted by external personal (Haber & Looney, 2000).


9.5 Quality improvement initiatives

Will an intervention such as this benefit older people if disseminated to the wider residential care industry? Quality improvement initiatives such as PILS are viewed by the industry as investments to improve health (Rosen, Mittal, Degenholtz, Castle, & Mulsant, 2005). Quality improvement initiatives have generally focused around quality indicators in long term care, including, but not limited to, medication error, pressure ulcers and falls; few initiatives have involved physical activity (Wagner et al., 2001). The majority of these initiatives have not been evaluated in randomised controlled trials, and therefore there can be no proof of causality and the results of these ‘best practices’ initiatives are illustrative rather than comprehensive (Masso & McCarthy, 2009). Some initiatives focused on transforming the physical and social environment involving residents during these developments, while other initiatives focused on providing front line staff, such as caregivers, with preceptor programmes and comprehensive training programmes that included a career pathway (Stone & Wiener, 2001).

Key to quality improvements is organizational change (Moss, Garside, & Dawson, 1998). This study did not set out to make changes across all organizational systems in the facilities; however PILS did require facilities to review some of its process to ensure that PILS could be delivered by usual care staff as set down in the research protocol. Each facility was unique in its own way such as; type of facility, style of leadership, resources available, levels of functional decline of residents and underlying organizational culture.

The type of ownership may have an effect on staffing behavioural differences and attitudes. This research set out to test feasibility and acceptability in general rather than the difference in performance between the for-profit and not-for-profit facilities. Future research could address this (Aaronson, Zinn, & Rosko, 1994). Building simultaneous equation models, such as described by Aaronson, included type of facility, case mix, occupancy, nursing staff levels and payment rate variables. These models may be able to show if differences between not for profit and for profit facilities significantly impact on interventions such as PILS.
In studies that have explored ownership, higher quality of care was provided in not-for-profit homes than for-profit homes evidenced by better staffing Harrington et al (2001; Schein, 1990) and Schnelle et al (2004) and better outcomes among residents at higher risk of adverse events Aaronson (1994). With a decreasing number of not-for-profit facilities in New Zealand, this information may well encourage health service planners to fund such facilities at a sufficient level to maintain quality.

9.6 Organisational culture

There appears to be a general consensus that organisational culture (‘the way we do things around here’) firstly needs to be defined, and secondly, changed to ensure long term effects of new programmes or interventions are sustained. Organisational culture in residential care facilities is poorly understood and under-researched, both internationally and in New Zealand. organisational culture is generally distinguished by three levels: artifacts; beliefs and values; and basic underlying assumptions (Schein, 1990) It is the taken-for-granted, underlying assumptions that most accurately describe what an organisation’s culture might be. The culture of an organisation is difficult to assess objectively because these underlying assumptions are not easily measured. Studies have demonstrated that culture type influences performance to a greater degree than the strength of the organisation’s culture (Cameron & Freeman, 1991).

Furthermore, variability in psychotropic medication use Chen et al (2010), feeding tube use Lopez et al (2010) along with determinants of quality improvement in long term care have been actively investigated and have shown that organisational culture is an important determinant of these improvements (Johnson, 2010; Mittal et al., 2005). For example, quality improvements have been noted to require a high level of communication among employees therefore a culture that emphasises teamwork seems essential. In the same way, a culture that encourages a willingness to take chances and willingness to learn new ways of working also seems important. Successfully implementing PILS required consideration of the implementation process, factors such as leadership style, the quality of information and training, all of which positively impacted on the design and effects of this innovation.
Qualitative insights from residents and staff, described in Chapter 5, reflect underlying cultural assumptions, and depict a culture derived from a total institutionalization paradigm such as lack of control and choice. Identification of an organisation’s culture creates a starting point for service planners and researchers, who can use this information to develop culturally appropriate programmes to improve quality, efficacy and patient focused care within the organisation. Further research to explore this is necessary to understand how a change in performance can impact care delivery in residential care.

9.7 Relevance of findings to clinical practice

Frail older people often have chronic conditions with functional deterioration over time, and are in need of both social and medical input. Older people enter residential care for a number of reasons, such as ill health, increasing cognitive impairment but most often, due to chronic disease (Weatherall et al., 2004; Wilkinson, 1999). On some occasions, because they no longer able to live independently or are unsafe in their own home, older people might be admitted to long term care because of social reasons such as the recent death of a spouse or close caregiver (Opie, 1991).

Older people in long term care are on a descending slope along the disability process where recovery to full health and function is often doubtful with this trajectory in mind the implementation of an intervention such as PILS may slow down the rate of decline rather than making a vast improvement (Feldman & Kane, 2003). The effects of the PILS intervention are clinically important when considering the number of older people in residential care who ‘hover’ close to the threshold of dependency. Key goals of health provision for long term care of older people include improving or maintaining the health and function (or slowing its rate of decline) by maximising function. There is a need to increase functional reserve of older people and activity programmes, such as this one, may be one feasible way to do this.

The way older people and staff transition into a facility, termed roles and realities in this thesis, reminds the researcher of the complexity of developing an intervention in residential care that expects staff and residents to act in different ways. Despite these
constraints, which threaded throughout the six-month long intervention, windows of opportunity were identified through which to incorporate the activities into residents’ activities of daily living. Time management skills were one such opportunity. Staff described operating in a resident centred manner rather than being task focused provided them with the time to assist residents with their activity programme.

Clinically this research is relevant because of its goodness of fit within the contexts of physical activity and the older person, and the residential care facility. It addresses an important and under-researched question: What works, and what does not, in relation to exercise for frail older people living in residential care? This intervention developed repetitive activities of daily living programme that incorporated individualised goal setting designed to increase physical activity and functional ability for long term care residents. Goal setting aimed to improve self efficacy, a potential predictor of adherence to exercise programmes for older people. Goal setting has been shown in community interventions to be effective but has been investigated to a lesser extent in residential care. Residents enjoyed the goal activity, with family and social interactions central to most goals set. Social networks have clinical importance showing they are a buffer to social isolation even for residents living with others in a residential care setting (Baltes & Mayer, 1999; McAuley et al., 2000).

PILS used a programme of low intensity activities of daily living exercise and clinically was suitable for the frail older people who were enrolled in the study. While there was a modest effect on self-reported health-related quality of life at three months, this effect was not evident at follow-up at six months. Clinically, the evidence that physical activity interventions can have an effect on quality of life is of clinical relevance. If older people feel better about themselves, then the development of depression and feelings of poor self-worth and self-esteem may be reduced or eliminated for this group of older people living in residential care (Henderson, 1990; Netz et al., 2005). For this reasons the PILS programme could be considered for more detailed evaluation and wider implementation.

Although depression was not an outcome measured during this intervention, the qualitative results suggest that residents did feel better participating in the physical
activity intervention and having something to strive towards was a key motivator in this study, as in others (Holden, 1991b). Residents in this study often felt they had had nothing to look forward too prior to PILS, highlighting that self-efficacy may be something that is lost to some extent when living in residential care.

Exercise prescription of low intensity activity may still be the most appropriate method of delivery of a physical activity intervention; however, the duration and dose may need to be modified. Delaying the progression of functional decline is an important component of effective care practice in long term care. Health professionals working in long term care should emphasise exercise and physical activity facility-wide. Policies to increase physical activity are essential not only for physical and mental well-being, but also for the prevention of falls (Cameron et al., 2010). Reducing falls by exercise programmes in community and residential care settings have been shown to be successful. Successful trials in residential care have recommended that fall prevention exercises could be specifically tailored and incorporated into frailer residents’ individualised programmes rather than standardised exercise programmes for the more physically active resident (Jensen, Lundin-Olsson, Nyberg, & Gustafson, 2002)

“Snack bites” of exercise may also be of benefit provided it remains consistent. Recent evidence that lifestyle physical activity (ie accumulating 30 minutes of physical activity during the day instead of 30 minutes of continuous exercise, may be attractive to older people (Elley, Bagrie, & Arroll, 2006). Certainly this study used repetitive activities of daily living activities to increase physical activity, and although physical performance did not improve overall, the interviews with the residents suggests that the majority of older people who had a degree of physically fitness and who were cognitively intact were able to actively participate in PILS, and moreover enjoyed the experience. Finding ways to engage residents with high dependency will always be challenging. The benefits of being able to transfer independently or with just one person cannot be underestimated for both care staff and residents.

Implementing any change in clinical practice can be complex and this study has shown the complexity in five rest homes in New Zealand. The results were mixed
and references to the broader organisational and cultural issues that might have influenced the uptake of PILS not only included the views of the staff but also residents. Finding what is important for residents in how or what they are prepared to change or reduce has significant clinical relevance.

Building an implementation plan that is incremental is important for staff. This would assist them to gradually develop a new way of working with the longer term objective of sustainability. This provides opportunities to build-in sufficient flexibility at different points along the implementation journey. Clinically providing resident centred care is purported in the literature as a philosophy of a professional human centered view, as well as a method of organisational design (Berkhout, 2000). In order to achieve higher organizational aims such as job satisfaction and work motivation, it is not sufficient clinically to focus on structural changes alone. Finding alternative ways in regard to work redesign to provide resident care is essential if interventions such as PILS are to be integrated into residents’ care. It seems important to look at the fundamental changes in the context of the care delivery models across all care staff including the task domain of the caregivers and the content of the nursing job of the registered nurse in order to positively impact on performance and attitudes accordingly.

### 9.8 Implications for research

Other than self reported health related quality of life in the short term in the frail resident, PILS was not effective in improving health outcomes. Nevertheless, physical activity interventions in general and functional repetitive activity of daily living programme in particular, are still worthy of further investigation. Further research is justified because of the evidence that muscle weakness, inactivity and disuse in older people may be able to reversed be impacted by activity programmes (Fiatarone-Singh & Mayer, 2002).

Randomised controlled trials are the ‘gold standard’ for evaluating the effectiveness of interventions due to their ability to control confounding factors. Trials that have been implemented in residential care settings to determine effectiveness of physical
activity interventions are problematic (Forster et al., 2008). This was demonstrated in PILS when control groups became involved in walking groups and other physical activities pertaining to the intervention. There are considerable complexities to the conduct of randomised controlled trials and a number of these have been addressed in chapter 6. In summary a large effectiveness study that randomised by rest home rather than wings within facilities, targeting residents with capability and potential for improvement, may be a more feasible approach. Furthermore understanding the impact of an intervention on function activity and falls is important and future research in residential care should include studies designed more specifically to address both outcomes (Scott, Donaldson, & Gallagher, 2003). Outcome measures that are more sensitive to small but relevant changes in very frail older people need to be developed.

In future trials, there also needs to be further “real world” research, studies aimed at cognitively intact residents, and studies designed specifically for less cognitively intact residents, or including less cognitively intact residents as a subgroup to a larger study (Lazowski et al., 1999; Przybulski et al., 1996). Studies that exclude residents with cognitive impairment, or intervention designs that involve such groups; independent of the more physically able residents that is able to detect an effect with adequate power, has yet to be established. Future studies therefore need to be large enough to detect accurately the effects of treatment on important health outcomes such as improved physical performance.

The ideal type of exercise to improve function and quality of life in older people living in residential care has yet to be established. The studies need to be large enough to detect accurately the effects of treatment on important health outcomes, for example the floor and ceiling effect when measuring quality of life in older people, particularly those in residential care. Floor effects are of concern given the reduced levels of health and functioning present in the population (Frytak, 2000; Kane & Kane, 1988). Measuring quality of life in residential care using other measures such as the WHOQOL which achieved good levels of internal consistency and validity, and test retest reliability may have the potential consolidate the knowledge base of QOL measures applicable to residential care (Courtney &
Edwards, 2003). Finally adverse events should be clearly defined and systematically monitored and adherence to the physical activity programmes should also be systematically collected and monitored.

The structure of the implementation at an organisational level is an important factor for success because it determines the level of participation of those directly affected by the change (Burke, 2002). Measuring job satisfaction by validated outcome measures would provide further evidence to support the semi structured interviews of staff members. Intervention designs that specifically include strategies to change organisational culture may enhance the effect of exercise programme.

Improving the physical activity and quality of life for older people that PILS set out to prove will fill a gap in the New Zealand literature in trying out new ways in care practices that allow older individuals more autonomy and choice as well as becoming fitter even though the evidence presented from this study was inconsistent with the physical performance outcomes. If interventions are designed that can improve not only health related quality of life but physical performance in residents and with staff well prepared and resourced adequately the overall benefits for both residents and staff will have important implications long term.
Appendices
References


Appendices


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Appendices


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Appendices

Appendix 1: Assessment form
Appendix 2: Promoting Independence Plan
Appendix 3: Resident plan
Appendix 4: Compliance recording sheet
Appendix 5: Ethics approval PILS trial
Appendix 6: Ethics approval interviews
Appendix 7: Adverse events form
Appendix 8: Interview schedules
Appendix 9: PILS published article
Appendix 10: Resident goals
Appendix 1: Assessment form

Appendix | Promoting Independent in Residential Care (PILS) Assessment Information  Example
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Resident: FD | Age: 85
Medical History: 
Osteoarthritis with bilateral TKJR L) Revise ’98  R) revised ’94 L THJR ’95
2x CVA with reduced sensation in R) hand
TURP 1992
CHF & IHD
Asthma
MI 1998

Social History: 
He was a cobbler and made orthotic footwear
Lived in Ellerslie locality for many years
2 Daughters (1 lives in Australia)
Jehovah’s Witness, wishes to become an evangelist
Moved with his wife into the rest home at the beginning of 2002
Previously was a fervent gardener

Mobility
Walks independently with walking frame, short distances within the facility. Unstable without support.

Resident Goal: 
To do gardening in the raised garden

Assessment results
Independent in dressing and grooming
Requires assistance with showering to was back, groin and lower limbs
Sits on shower chair
Has poor standing tolerance
Painful knees on transferring with difficulty getting out of low chairs.

Rehabilitation Plan
Increase leg strength
Increase walking endurance with frame
Maintain independence in dressing and grooming
Encourage input in showering for upper limbs
Improve standing balance

Exercises
5 sit to stand repeated 2x daily. To be done from own raised chair in room
10 Bilateral knee extensions 2x daily
Maintain walking to Wing 2 lounge and dining room daily and extra trip to Dining room each day.
Break down of functional task required to complete goal

Standing: balance exercises
Functional reach: long reach back scrubber for showering
Sit to stand: correct height chair
Increased spinal flexion
Pain management: regular pain relief prior to exercises
Heat packs prior to exercises
Change showering to the afternoons
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<th>Mr D</th>
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**Mr D has had two strokes and gets pain in his knees**

**AIM**
Mr D wants to do the gardening

**Washing and dressing**
- Mr D can dress himself though needs help with the shower.
- Mr D walks to the shower by himself.
- When Mr D has a shower, he needs to sit on the shower chair as he can be a bit wobbly standing up.
- Mr D can take his clothes off by himself and dress himself. You only need to help if he gets stuck. **BUT DO NOT RUSH HIM.**
- When Helen has given him a back scrubber, he can wash himself so only help him when he needs it.

**Chair exercises MORNING, LUNCH and AFTERNOON**
- Please remind Mr D about his exercises.
- Whilst sitting in the chair, practice standing and sitting FIVE times (remind him to take it slowly and pause between stands)
- Whilst sitting, with his feet on the floor, ask him to lift his left leg in the air until the leg is straight and hold for 10 seconds. Repeat FIVE times and the same for the right leg.
- Whilst sitting in chair, ask Mr Driver to put his feet flat on the floor and lift his toes towards the sky then relax, then lift his heels up to the sky and relax. Repeat TEN times. He can do this himself, so just remind him to do them every hour.

**Standing exercises EVERY MORNING**
- When practicing balance – please stand beside Mr D ready to help if needed.
- Ask Mr D to stand with his feet apart.
- Ask Mr D to close his eyes and stand for 20 seconds. Repeat TWICE.
- Ask Mr D to reach to the sky with his left hand, then reach his hand forward as much as he can, and then to the side. Repeat FIVE times and then repeat for right hand.

**Walking exercises (EVERY AFTERNOON)**
- Mr D needs to walk to Wing 2 lounge three times a day.
- As well as his walks to the dining room, Mr D needs to be encouraged to walk to reception every day and on the way back into the garden (if it’s not raining).
- When walking outside, walk beside Mr D and make sure there’s a chair close for him to sit on to rest.
Appendix 3: Resident plan

Mrs M Exercise Plan

EVERY MORNING, LUNCH and AFTERNOON

WALKING
• Walk to the dining room doing a circuit of the corridors on the way there and back
• If weather is ok, walk around the outside of the building with your caregiver

CHAIR EXERCISES
• Sit and then stand from a chair 5 times and rest for 1 minute, then repeat. As you become fitter, after a week, add another 5 sit to stands
• Whilst sitting in chair, lift bottom off chair and hold for 10 seconds. Repeat 5 times.
Appendix 4: Compliance recording sheet

Appendix Promoting Independent Living Study Exercise Checklist
Caregivers Please check off when the exercises completed with resident
Please sign and date alongside resident. Thank you.

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Appendix 5: Ethics approval PILS trial

5 March 2003

Dr Ngaire Kerse
Department of General Practice & Primary Health Care
University of Auckland
Private Bag 92 019
Auckland

Dear Dr Kerse

2001/264 Promoting independent living study (PILS): a controlled investigation of a client centred repetitive activities of daily living (ADL) programme in residential care: PIS/Cons V#6, 1/12/2001. PIS/Cons V#7, 10/2/03.

Thank you for the updated Patient Information Sheet Version 7, dated 10/2/03 received on 25 February and your Progress Report received on 6 January 2003.

The Chairperson of Committee Y considered the progress report for this study.

Continuing approval is given. The next progress report is due 19 December 2003.

Yours sincerely

Yvonne Eitson
Administrator

CC: Auckland DHB
Appendix 6: Ethics approval interviews

17 December 2002.

Ms Kathryn Peri
School of Nursing
University of Auckland
PB 82 019
Auckland.

Dear Kathy,

AKX/02/00/269  Lived Experience: the PILS programme: PIS/Cons V#2, 1/12/02

Thank you for your amendments, received 13 December 2002.

The above study has been givenethical approval by Auckland Ethics Committee X. Approval is conditional on the Committee being advised when the study is completed.

Certification
It is certified as not being conducted principally for the benefit of the manufacturer and will be considered for coverage under ACC.

Accreditation
This Committee is accredited by the Health Research Council and is constituted and operates in accordance with the Operational Standard for Ethics Committees, March 2002.

Progress Reports
The study is approved until September 2003. Should you wish to extend the study time, a progress report will be required December 2003. A form should come off our database requesting this information prior to the review date. Please note that failure to complete and return this form may result in the withdrawal of ethical approval.

A final report is also required at the conclusion of the study.

Requirements for SAE Reporting

Please advise the Committee as soon as possible of the following:

- any study in another country that has stopped due to serious or unexpected adverse events
- withdrawal of investigational product for continued development
- withdrawal from the market for any reason
- all serious adverse events which result in the investigator or sponsor breaking the blindness code at the time of the SAE or which result in hospitalisation or death.

Amendments
All amendments to the study must be advised to the Committee prior to their implementation, except in the case where immediate implementation is required for reasons of safety. In such cases the Committee must be notified as soon as possible of the change.

Accredited by Health Research Council

....../2
General

It should be noted that Ethics Committee approval does not imply any resource commitment or administrative facilitation by any healthcare provider within whose facility the research is to be carried out. Where applicable, authority for this must be obtained separately from the appropriate manager within the organisation.

Please note a new version of the application form (EA0502) is now available either by email from the Administrator or from the Health Research Council website, www.hrc.govt.nz. Form EA0699 will not be accepted after 31 December 2002.

Yours sincerely

Pat Chainey
Committee X Administrator

Cc: Auckland DHB Research
Information Sheet Promoting Independent Living Study (PILS)

A team of health professionals who work at the University of Auckland has invited residents and staff from the XXXX Group of Rest Homes to be part of a project that may improve function in some of the residents. The impact of this increased activity through promoting independence will hopefully improve overall function and well being in older people living in the rest home. In other words it may increase satisfaction with life, as well as increase the ability to complete activities of daily living and other simple tasks.

Once the residents have been identified as being part of the project several things will happen, firstly the staff at Rest Home X, primarily the Nurse Manager will ask the resident what goal/s that she/he would like to achieve. Once this has been decided the staff and the resident develop a care plan that sets out a series of activities to help achieve the goal. In simple terms this might mean standing up several times instead of once or walking down the hallway several times a day instead of just once a day. The health care assistant’s will offer the residents extra encouragement to practice their activities on a daily basis.

Secondly as there has been little research about improving function in older people living in residential care, health professional from the University of Auckland will ask the resident if she/he would like to part of the research. If they consent to participate a research nurse, who has been specially trained for this project will interview all the participants. They will be asked questions about their health and asked to complete several simple tasks, such as standing up, reaching forward and walking a short distance.

One of the wings of Rest Home X will try out this more active way of caring for residents (active group) and some will continue the same way (control group).

This project is expected to start in the middle of February 2003 and finish early August 2003.

If you have any questions about this project please contact Kathy Peri Researcher or Dr Matthew Parsons: University of Auckland, School of Nursing Phone 373 7599 ext 8505 or ext 3033.
Appendix 7:  Adverse events form

<table>
<thead>
<tr>
<th>PILS</th>
<th>Registration No:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promoting Independent Living Study</td>
<td>Date of Birth:</td>
</tr>
<tr>
<td>ADVERSE EVENTS FORM</td>
<td>Name:</td>
</tr>
</tbody>
</table>

1. Assessment Details

Date of Assessment ______________________________

2. Subjective Comments

2.1 Have you experienced any of the following problems over the past few days?

2.1.1 Leg Pain (tick one only)

- No pain
- mild leg pain
- moderate leg pain
- severe leg pain

2.1.2 Pain in other body regions (tick one only and indicate locality of pain))

- No pain
- mild pain
- moderate pain
- severe pain

- Site of pain ______________________________

2.1.3 Fatigue (tick one only)

- No fatigue
- mild fatigue
- moderate fatigue (some interference with activities)
- Severe fatigue (definite interference with activities)

3. Adverse Event

YES  NO  Resident has suffered a fall, injury or other adverse event since last visit. (circle one)

If yes, complete Question 4

4. Following Adverse Event indicate: (tick only one)

4.1 Resident has reduce exercises
4.2 Resident has stopped exercises temporarily
4.3 Resident has stopped exercises permanently

If stopping exercises/unable to continue, state reason: ____________________________________________
5. **Signature of investigator:**

<table>
<thead>
<tr>
<th></th>
<th>Signature</th>
<th>Printed Name</th>
<th>Date</th>
</tr>
</thead>
</table>

Comments: 

---

---
<table>
<thead>
<tr>
<th>PILS Participants Demographic and Medical Detail Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID No. ..................................................</td>
</tr>
<tr>
<td>Name ......................................................</td>
</tr>
<tr>
<td>DOB .......................................................</td>
</tr>
<tr>
<td>Date of Admission .......................................</td>
</tr>
<tr>
<td>Country of Birth .........................................</td>
</tr>
<tr>
<td>Ethnicity ..................................................</td>
</tr>
</tbody>
</table>

**Medical Problems**

1. .................................................. 5. ..................................................
2. .................................................. 6. ..................................................
3. .................................................. 7. ..................................................
4. .................................................. 8. ..................................................

**Medications**

1. .................................................. 5. ..................................................
2. .................................................. 6. ..................................................
3. .................................................. 7. ..................................................
4. .................................................. 8. ..................................................
Appendix 8: Interview schedule

<table>
<thead>
<tr>
<th>Promoting Independent Living Study Abbreviated mental test score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abbreviated Mental Test Score (AMTS)</strong></td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Time</td>
</tr>
<tr>
<td>Month</td>
</tr>
<tr>
<td>201 Queen Street</td>
</tr>
<tr>
<td>Year</td>
</tr>
<tr>
<td>Name of place</td>
</tr>
<tr>
<td>Date of birth</td>
</tr>
<tr>
<td>Start of WWII</td>
</tr>
<tr>
<td>Name of present monarch</td>
</tr>
<tr>
<td>Count from 20 to 1 (backwards)</td>
</tr>
</tbody>
</table>

- Age: Must be correct
- Time: Without looking at timepiece, correct to nearest hour
- Month: Exact
- 201 Queen Street: Give this address, Check registration, Check memory at end of test
- Year: Exact, except in Jan/Feb when previous year is okay
- Name of place: If not in hospital ask type of place or area of town
- Date of birth: Exact
- Start of WWII: Exact
- Name of present monarch: Exact
- Count from 20 to 1 (backwards): Can prompt with 20-19-18, but no further prompts. Patient can hesitate and self correct but no other errors

Total Score=
### SF-36

1. In general, would you say your health is:

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Very good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
</tr>
</tbody>
</table>

2. Compared to one year ago, how would you rate your health in general now?

<table>
<thead>
<tr>
<th>Much better now than a year ago</th>
<th>Somewhat better now than a year ago</th>
<th>About the same as a year ago</th>
<th>Somewhat worse now than a year ago</th>
<th>Much worse now than a year ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
</tr>
</tbody>
</table>
3. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

<table>
<thead>
<tr>
<th>Activity Description</th>
<th>Yes, limited a lot</th>
<th>Yes, limited a little</th>
<th>No, not limited at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Lifting or carrying groceries</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Climbing several flights of stairs</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Climbing one flight of stairs</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Bending, kneeling, or stooping</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Walking more than a kilometre</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Walking several hundred metres</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Walking one hundred metres</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. Bathing or dressing yourself</td>
<td>1. 2. 3.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

<table>
<thead>
<tr>
<th>ID NUMBER</th>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Cut down on the amount of time you spent on work or other activities</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td>b. Accomplished less than you would like</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
</tr>
<tr>
<td>c. Were limited in the kind of work or other activities</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
</tr>
<tr>
<td>d. Had difficulty performing the work or other activities (for example, it took extra effort)</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
</tr>
</tbody>
</table>
5. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

<table>
<thead>
<tr>
<th></th>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Cut down on the amount of time you spent on work or other activities</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td>b. Accomplished less than you would like</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Did work or other activities less carefully than usual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
</tr>
</tbody>
</table>
7. How much **bodily** pain have you had during the **past 4 weeks**?

<table>
<thead>
<tr>
<th>None</th>
<th>Very mild</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Very severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
<td>6.</td>
</tr>
</tbody>
</table>

8. During the **past 4 weeks**, how much did **pain** interfere with your normal work (including both work outside the home and housework)?

<table>
<thead>
<tr>
<th>Not at all</th>
<th>A little bit</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
</tr>
</tbody>
</table>
9. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

<table>
<thead>
<tr>
<th>Question</th>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Did you feel full of life?</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>b. Have you been very nervous?</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>c. Have you felt so down in the dumbs that nothing could cheer you up?</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>d. Have you felt calm and peaceful?</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>e. Did you have a lot of energy?</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>f. Have you felt downhearted and depressed?</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>g. Did you feel worn out?</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>h. Have you been happy?</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
<tr>
<td>i. Did you feel tired?</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
<td>★</td>
</tr>
</tbody>
</table>
10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

<table>
<thead>
<tr>
<th>All of the time</th>
<th>Most of the time</th>
<th>Some of the time</th>
<th>A little of the time</th>
<th>None of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
<td>4.</td>
<td>5.</td>
</tr>
</tbody>
</table>

11. How TRUE or FALSE is each of the following statements for you?

<table>
<thead>
<tr>
<th></th>
<th>Definitely true</th>
<th>Mostly true</th>
<th>Don't know</th>
<th>Mostly false</th>
<th>Definitely false</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I seem to get sick a little easier than other people</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td>b. I am as healthy as anybody I know</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td>c. I expect my health to get worse</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td>d. My health is excellent</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
<td>▼</td>
</tr>
</tbody>
</table>
### Promoting Independent Living Study
#### Reduced Item Barthel Index (Collin et al, 1988)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bowels</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>(Proceeding week)</td>
<td>0 Incontinent (or needs to be given enema)</td>
</tr>
<tr>
<td></td>
<td>1 Occasional accident (one/week)</td>
</tr>
<tr>
<td></td>
<td>2 Continent (for over 7 days). If needs enema from nurse, then ‘incontinent’. Occasional = once a week</td>
</tr>
<tr>
<td><strong>Bladder</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>(Proceeding week)</td>
<td>0 Incontinent, or catheterised and unable to manage</td>
</tr>
<tr>
<td></td>
<td>1 Occasional accident (max. once per 24 hrs)</td>
</tr>
<tr>
<td></td>
<td>2 Continent (for over 7 days). Occasional = less than once a day. A catheterised patient who can completely manage a catheter alone is registered as ‘continent’</td>
</tr>
<tr>
<td><strong>Grooming</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>(Proceeding 24-48 hrs)</td>
<td>0 Needs help with personal care</td>
</tr>
<tr>
<td></td>
<td>1 Independent face/hair/teeth/shaving (implements provided). Refers to personal hygiene: doing teeth, fitting dentures, doing hair, shaving, washing face. Helper can provide implements.</td>
</tr>
<tr>
<td><strong>Toilet use</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>0 Dependent</td>
<td>1 Needs some help, but can do something alone</td>
</tr>
<tr>
<td></td>
<td>2 Independent (on &amp; off, dressing, wiping) Should be able to reach toilet/commode, undress sufficiently, clean self, dress &amp; leave. With help = can wipe self, and do some other of above.</td>
</tr>
<tr>
<td><strong>Feeding</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>0 Unable</td>
<td>1 Needs help cutting, spreading butter etc</td>
</tr>
<tr>
<td></td>
<td>2 Independent (food provided in reach). Able to eat any normal food (not only soft food). Food cooked &amp; served by others, but not cut up. Help = food cut up, patient feeds self.</td>
</tr>
<tr>
<td><strong>Transfer</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>(From bed to chair and back)</td>
<td>0 Unable – no sitting balance</td>
</tr>
<tr>
<td></td>
<td>1 Major help (one or two people, physical), can sit</td>
</tr>
<tr>
<td></td>
<td>2 Minor help (verbal or physical)</td>
</tr>
<tr>
<td></td>
<td>3 Independent</td>
</tr>
<tr>
<td></td>
<td><strong>Dependent = no sitting balance (unable to sit); two people to lift.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Major help = one strong/skilled, or two normal people. Can sit up.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Minor help = one person easily, OR needs any supervision for safety.</strong></td>
</tr>
<tr>
<td><strong>Mobility</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>0 Immobile</td>
<td>1 Wheelchair independent including corners etc</td>
</tr>
<tr>
<td></td>
<td>2 Walks with help of one person (verbal or physical)</td>
</tr>
<tr>
<td></td>
<td>3 Independent (but may use any aid, e.g. stick)</td>
</tr>
<tr>
<td></td>
<td>Refers to mobility about the house or yard, indoors. May use aid. If in wheelchair, must negotiate corners/doors unsaided. Help = by one, untrained person including supervision/moral support</td>
</tr>
<tr>
<td><strong>Dressing</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>0 Dependent</td>
<td>1 Needs help, but can do about half unsaid</td>
</tr>
<tr>
<td></td>
<td>2 Independent (including buttons, zips, laces etc) Should be able to select and put on clothes, which may be adapted. Help = help with buttons, zips, etc; can put on some garments alone</td>
</tr>
<tr>
<td><strong>Stairs</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>0 Unable</td>
<td>1 Needs help (verbal, physical, carrying aid)</td>
</tr>
<tr>
<td></td>
<td>2 Independent up &amp; down. Must carry aid used to be independent</td>
</tr>
<tr>
<td><strong>Bathing</strong></td>
<td><strong>Explanation</strong></td>
</tr>
<tr>
<td>0 Dependent</td>
<td>1 Independent (or in shower). Usually the most difficult activity. Must get in &amp; out unsupervised &amp; wash self. Independent in shower = ‘independent’ if unsupervised / unsaided</td>
</tr>
</tbody>
</table>

**Total Score (0 – 20)**
## Promoting Independent Living Study
### EuroQol

<table>
<thead>
<tr>
<th>Scale of health state:</th>
<th>0</th>
<th>Not selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>9</td>
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<tr>
<td></td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compared with my general level of health over the past 12 months, my health state today is:</th>
<th>0</th>
<th>Not selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>Better</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Much the same</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Worse</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mobility</th>
<th>0</th>
<th>Not selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>I have no problems in walking</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>I have some problems in walking about</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>I am confined to bed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self care</th>
<th>0</th>
<th>Not selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>I have no problems with self-care</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>I have some problems washing or dressing myself</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>I am unable to wash or dress myself</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Usual Activities (e.g. work, housework, frailty, or leisure activities):</th>
<th>0</th>
<th>Not selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>I have no problems in performing usual activities</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>I have some problems performing usual activities</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>I am unable to perform usual activities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pain/Discomfort:</th>
<th>0</th>
<th>Not selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>I have no pain or discomfort</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>I have moderate pain or discomfort</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>I have extreme pain or discomfort</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Anxiety/Depression:</th>
<th>0</th>
<th>Not selected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>I am not anxious or depressed</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>I am moderately anxious or depressed</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>I am extremely anxious or depressed</td>
</tr>
</tbody>
</table>

Total Score =  
Vas Score =
## Promoting Independent Living Study
**LSI-Z (Neugarten et al, 1961)**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree</th>
<th>Disagree</th>
<th>Uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am just as happy as when I was younger</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>These are the best years of my life</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>This is the dullest time of my life</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Most of the things I do are boring or monotonous</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Compared to other people I get down in the dumps too often</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>The things I do are as interesting to me as they ever were</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I've made plans for things I will be doing a month or a year from now</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>As I grow older, things seem better than I thought they would be</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>As I look back on my life, I am fairly well satisfied</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I have gotten pretty much what I expected out of life</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>When I think back on my life, I didn’t get most of the important things I wanted</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>In spite of what people say, the lot of the average person is getting worse not better</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>I have gotten more of the breaks in life than most of the people I know</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Score=
Appendix 9: PILS published article
Promoting Independent Living Study: (PILS)

Fear of Falling

1. Are you afraid of falling
   - Not at all: 1
   - Somewhat afraid: 2
   - Fairly afraid: 3
   - Very afraid: 4
   - Don’t know: 8
   - Refused: 9

2. Do you think fear of falling has made you cut down on any activities that you used to do?
   - Yes: 1
   - No: 2
   - Don’t know: 3
   - Refused: 4

Record activities only if volunteered, don’t ask.
Interview Questions: Health Care Assistants

How did you come to be working at this rest home?

How do you feel about what you do here with/for older people

Who helps you

Who hinders you

Who is your mentor role model

What has it meant to you to be part of the PILS PROJECT?

Has anything changed in the way you care for the residents who have been part of the PILS project

Has it changed how you work with the other residents in the home?

Were their times when it was difficult to get the residents to do the tasks set down in their individual plan?

What support did you get from other staff that works with you?

The OT/Physio

The Registered Nurse

The Management

How did you feel about the change in rest home your personal experiences about it

Have you thought about other things that you could change in the homes since the start of the PILS project

How much did the individual plan in the resident’s room help you with your caring?

Did the project create difficulties for you?

If so how

If not why not

What do you consider the success of the program?

For yourself

For the residents

Were their any areas that did not work very well? For you For the resident
Guideline to Semi Structured Interview Questions for Residents

Tell me how you came to be living in this Rest Home
How were you approached about being part of the PILS PROJECT?
What influenced your decision to be part of the project?
How confident were you at the beginning that you could achieve the goal/s you set?
Were their any other issues or concerns when you first agreed to set these goals for yourself?
If you did what did they relate to?
Tell me what things made it easier or harder once you set about to achieve your goal
What did it feel like having a goal to achieve?
Did it encourage you to make further goals that didn’t involve the project
How did the staff in the home help?
Where their any particular things that kept you motivated?
What other things have happened to you since being on the program?
Has life been more satisfying since you have been on the project?
Where you someone that participated in the activities and exercise classes before coming onto the PILS program?
Have you made any other changes since being on the program?

If you had a chance to start on project again what would you like to be done differently?
Is there anything else you would like to say about the PILS project?
Appendix 10: PILS published article

Does functionally based activity make a difference to health status and mobility? A randomised controlled trial in residential care facilities (The Promoting Independent Living Study; PILS)

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4Boston University, Boston, Massachusetts, USA

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Abstract

Objectives to determine whether a repetitive activities of daily living (ADL) activity programme improves health status, life satisfaction and mobility for older people living in residential care.

Design cluster randomised controlled trial.

Setting five low-level dependency residential home houses in Auckland, New Zealand.

Participants one hundred and forty-nine older residents (mean age 84.7 years).

Intervention trained research staff worked with residents in intervention wards to set a goal and complete a functional assessment for each resident. They then designed an individualised activity programme based on ADL and worked with residential care home staff to implement the programme into daily activities of residents.

Measurements: mobility: timed-up-and-go (TUG); life satisfaction: late life satisfaction index (LLSI-Z); and health status: SF-36 were assessed at baseline, 3- and 6-months follow-up.

Results in the intervention group the SF-36 total physical component summary (PCS) score improved at 3 months in comparison with the control group. There was no difference between groups on mobility measures at any time, nor any measures at 6-months follow-up. Significant change is likely to have affected the 6-month follow-up measures.

Conclusions: a repetitive ADL exercise programme may improve health status in the short term in a group of frail older people living in residential care. Further research is needed to establish sustainability of change.

Keywords: older people, functional exercises, goal setting, long-term care, randomised controlled trial, elderly

Introduction

Age-related reduction in muscle strength and power, cardiovascular function and neuromuscular response times, all contribute to the declining physical ability with age [1, 2]. Activity and exercise improve health status, muscle strength, aerobic capacity, and reduce fracture risk [3] as well as improving quality of life [2, 4]. Increasing habitual exercise can assist older people in maintaining functional performance [5], even for those in residential care [6] with the very frail having the most to gain from becoming regularly active [7].

At least 30% of older people experience decline in physical activity after entry into residential care [7]. Participation in activity programmes is more difficult for older people because of fear, lack of motivation, depression and poor understanding of the long-term benefits of physical activity [8]. Effective physical activity interventions have been developed for populations in residential care [9]. Successful programmes include: progressive resistance training [10] and strengthening and balance exercises [11, 12]. These interventions were resource intensive, requiring exercise facilitators, physiotherapists and extra staff, constraining widespread dissemination. Staff
within residential care are constantly under pressure limiting implementation efforts for intensive programmes.

Few trials have attempted to increase habitual activity by incorporating more usual activities into everyday life. Successful examples in the community have not been replicated on more frail populations [13].

We developed a repetitive activities of daily living (ADL) programme designed to increase physical activity and functional ability for long-term care residents, that incorporated individualised goal setting. Goal setting aims to improve self-efficacy, a potential predictor of adherence to exercise programmes for older people [14, 15]. Tailoring activity around an individual’s specific functional goal may promote participation and deliver a more realistic and practical long-term increase in physical activity [16].

This paper reports the results of a randomised controlled trial testing the impact of this intervention on mobility, life satisfaction and health status of frail older people living in long-term residential care.

**Methods**

A cluster randomised controlled trial design was used to test the effectiveness of the individualised functional goal-setting programme.

This study was approved by the Auckland Ethics Committee.

**Setting and participants**

The study was conducted in five residential care homes (subsequently called homes) in Auckland, New Zealand. These homes are low-level dependency homes (equivalent to some assisted living facilities in the USA or hostels in Australia). Residents are commonly ambulatory and need minimal assistance with transferring, are independent in eating, but dependent in instrumental ADLs. The sample of homes included two ‘for profit’ and three ‘not for profit’ homes. These homes volunteered their participation in the study as part of a partnership between the University of Auckland and the residential care industry in the development of quality improvement programmes.

**Eligibility criteria and recruitment**

Exclusion criteria for residents were: under the age of 65 years, admission for respite or terminal care; and quadriplegia. All other residents regardless of cognitive or physical ability were eligible for participation and were invited to take part by research staff. Written consent was obtained from one senior management staff of the home. All residents or their family members, when participants could not consent for themselves, were invited to participate and gave written informed consent.

**Randomisation and blinding**

Two similar wings were identified by researchers and management staff and allocated to either the intervention or control group by the toss of a coin performed by an independent researcher [17]. All residents in each wing were then offered participation. A research nurse blinded to the allocation, then collected baseline, 3- and 6-month outcome measures.

**Measures**

Demographic and health details including age, gender, length of stay in the care setting, care needs level, current medications and co-morbidities were recorded from the medical chart at baseline. The Abbreviated Mental Test was administered to assess mental status [18], and the Barthel Index assessed function at baseline [19].

**Outcomes**

The primary outcomes for the trial were change in health status and mobility over time.

Mobility was assessed using the Elderly Mobility Scale (EMS), a measure of observed function incorporating common activities such as getting on and off the bed and functional reach, and the timed-up-and-go score (TUG) [20, 21].

Health status was assessed using all the SF-36 two summary scales for physical health (physical component summary, PCS) and mental health (mental health component summary, MHCS) [22]. Satisfaction with life was measured using the Life Satisfaction Index (LSI-2) [23].

**Adverse events**

Adverse events: musculoskeletal pains and falls, fatigue and number of falls, were recorded by self-report every 2 months using an interviewer assisted questionnaire administered by an independent researcher, blinded to group allocation.

**The control group**

Residents received usual care and were offered the opportunity at the conclusion of the trial to participate in the goal setting physical activity intervention.

**The intervention group**

Registered nurses and health care assistants attended two educational sessions about the study prior to the intervention commencing in the home. The first educational session provided an overview on resident centre-ness and the rationale for increasing function in frail older populations. The second provided information about the intervention; and practical training about delivery of the activities of daily exercise programme.

The intervention was a 12 activity programme developed by a trained gerontologist research nurse and delivered by usual caregivers as follows:

(i) Goal setting phase:
 Controlled trial in residential care facilities

A compliance recording sheet was developed and used in two homes where staff recorded observed compliance on a daily basis. The other three homes relied on health care assistants recording compliance daily in the residents’ case notes.

Sample size and power
To show a clinically relevant change of three in the physical component score of the SF-36 was not due to chance alone; we required a sample size of 67 in each group (0.80 power, 0.05 alpha), adjusted for the design effect of a clustered sample, using an estimated intra-class correlation of 0.01 for physical component score. This number of people also resulted in 90% power to detect changes in the mobility measure EMS, and 95% power to show change in the LSI-Z, life satisfaction measure.

Statistical analysis
Descriptive and summary statistics were produced using SPSS release 12. Outcome analysis was by intention-to-treat maintaining all participants in their original groups. Repeated measures analysis was used to investigate the change in SF-36 scores over the 6 months. Specific hypotheses tested using contrasts were the change between baseline and 3 months and the change between baseline and 6 months. Linear mixed models with time as a repeated measure and an autoregressive correlation structure were used. Age, gender, Barthel and mental test score were included in the models. Rest home was included as a factor to adjust for clustering.

Results
Baseline characteristics
The size of the homes varied from 28 to 72 beds. Two of the larger homes comprised two separate complexes on the same site. The other three homes were single complexes made up of separate wings. Care delivery in each wing was administered independently with no crossover of staff or residents during the study period. Figure 1 shows recruitment and participant flow through the study.

A total of 208 residents were available to be recruited to the study. Of this total, 149 residents were recruited with an average age of 85 years (Figure 1). Those not eligible (n = 33), were acutely unwell, terminally ill or under the age of 65 years, and 26 refused to take part (response rate 85%).

All residents who consented participated in the baseline assessments.

The main demographic variables did not vary between groups (Table 1).

Intervention uptake
All residents in the intervention group n = 73 set a goal and participated in the repetitive ADL programme. Just over half the residents in the intervention group achieved their goal during the 6 months n = 40. Goals were categorized...
as involving day-to-day functionality, walk to the toilet or craft room, 28 residents; social functionality, visit relative, gardening 35 residents; leisure functionality, play soccer, walk to the mall, 13 residents. Day-to-day functional goals were mostly situated in (11) and around (15) the rest home with 2 in the community. Social functionality goals were usually situated in the community or different town (22) with the minority being in (6) or around (4) the rest home. Leisure functionality goals were split between the community (9) and inside the rest home (4).

Adherence to the intervention was variable. Over half the intervention group completed their programme once a day rather than twice as prescribed. Conversations with residents indicated that this was related to staffing and other resource factors within the homes, rather than the unwillingness of the residents to participate in the programme.

Observations of research staff indicated that in two homes the control group residents were observed participating in activities with intervention group residents in the lounge or during walking group outings. Ways to minimise this contamination were discussed at the regular review meetings with all staff.

Table 2 shows the results of the outcome analyses. There were no differential changes in observed mobility or life satisfaction with measures, TUG, EMS, ILSI-Z between the groups over time. Repeated measures analysis showed no significant improvement in the SF-36 PCS scale score in

Figure 1. Flow of residents through a trial of an ADL programme. *Denotes location of goal attainment inside facility in one's own room, dining room, lounge outside facility, within the grounds of the residential care home; community, out in local community or town; different town, other towns within New Zealand or country in Australia.
Table 1. Demographic and health characteristics of older residential care home residents enrolled in a trial of a programme to promote independence

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean)</td>
<td>84.7 (6.7)</td>
<td>84.8 (6.5)</td>
</tr>
<tr>
<td>Women (%)</td>
<td>64 (80)</td>
<td>62 (80)</td>
</tr>
<tr>
<td>Ever married (%)</td>
<td>61 (80)</td>
<td>55 (75)</td>
</tr>
<tr>
<td>Number of medications</td>
<td>4.8 (1.0)</td>
<td>4.9 (1.1)</td>
</tr>
<tr>
<td>SMM 2s (%)</td>
<td>11 (10)</td>
<td>9 (28)</td>
</tr>
<tr>
<td>SMM 3s (%)</td>
<td>53 (70)</td>
<td>46 (63)</td>
</tr>
<tr>
<td>SMM 4s (%)</td>
<td>12 (16)</td>
<td>18 (25)</td>
</tr>
<tr>
<td>Barthel index mean (SD)</td>
<td>17.5 (5.3)</td>
<td>17.8 (2.2)</td>
</tr>
<tr>
<td>MMSE mean (SD)</td>
<td>70 (2.8)</td>
<td>70 (2.5)</td>
</tr>
</tbody>
</table>

SD: standard deviation; AMTS: Abbreviated Mental Test Score; range, two to 16; greater than 6 indicates cognitive impairment; SMM: Support need level; a measure of functional ability; range, 5 (bed-bound and requiring nursing care daily) to 5 (relatively independent).

the intervention group at 3 months follow-up compared with the control group. This difference was not evident at 6 months. The control group appeared to increase scores in most categories between 3- and 6-months follow-up, thereby lessening the observable difference between the groups.

Adverse events

There was no difference in the frequency of self reported leg pain between the intervention and control groups. Fatigue was reported by 31 and 43% of the intervention and control group, respectively, P = 0.182.

Falls

Fifty-seven per cent (43 of 76) of the control group reported sustaining at least one fall over the intervention period compared to 42% (31 of 73) of the intervention group (P = 0.127).

Discussion

This study suggests that an individualized repetitive ADL programme may have improved health status for low-level dependency residential care home residents at least in the short term. The effects of such an intervention are clinically important when considering that many older people in residential care ‘hover’ close to a ‘dependency threshold’. There is a need to increase the functional reserve of older people and activity programmes may be one feasible way to do this.

This study did not show a sustained improvement in health status beyond 3 months. There was evidence of contamination of control group participants in this trial with control group participants being observed taking part in walking groups and exercise classes with the intervention group. This may have significantly influenced their own level of function and well being, thereby lessening the chance of observing an intervention effect, a type 1 error, or failure of the internal validity of the result. Both physical and mental health summary scores of the SF-36 tended to improve in the control arm in the second 3 months of the trial. If this has occurred it may have obscured a potentially larger improvement as a result of the intervention than what was observed. This potential for contamination is common in trials where control and intervention groups were not completely separated [24, 25]. Further trials of programmes where activity programmes are delivered by staff in facilities would be better to randomise facilities, rather than sections of facilities.

This study was acceptable to residents (response rate 85% and low drop number of dropouts) probably because it incorporated moderate intensity functional task type activity into daily activities [8, 13, 26, 27] and it was facilitated by

Table 2. Comparison of outcome measures of older residential care home residents enrolled in a trial of a programme to promote independence

<table>
<thead>
<tr>
<th>Group</th>
<th>Intermittent</th>
<th>3 m</th>
<th>6 m</th>
<th>P-value for difference between intervention and control over time</th>
</tr>
</thead>
<tbody>
<tr>
<td>TUG</td>
<td>Control</td>
<td>29.9 (2.3)</td>
<td>28.4 (2.4)</td>
<td>29.9 (2.4)</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>27.8 (2.4)</td>
<td>30.2 (2.4)</td>
<td>15.8 (2.4)</td>
</tr>
<tr>
<td>FMS</td>
<td>Control</td>
<td>15.2 (0.9)</td>
<td>15.8 (0.9)</td>
<td>15.8 (0.9)</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>15.0 (0.9)</td>
<td>15.0 (0.9)</td>
<td>15.0 (0.9)</td>
</tr>
<tr>
<td>LSST PCS</td>
<td>Control</td>
<td>40.5 (3.2)</td>
<td>38.8 (3.2)</td>
<td>39.5 (3.2)</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>40.1 (3.2)</td>
<td>40.1 (3.2)</td>
<td>35.3 (3.2)</td>
</tr>
<tr>
<td>SF-36 PCS</td>
<td>Control</td>
<td>53.7 (3.4)</td>
<td>53.0 (3.4)</td>
<td>55.3 (3.4)</td>
</tr>
<tr>
<td></td>
<td>Intervention</td>
<td>53.0 (3.4)</td>
<td>53.0 (3.4)</td>
<td>55.3 (3.4)</td>
</tr>
</tbody>
</table>

TUG: Timed up and go test; range, 8–120 s; higher score means better mobility; FMS: Falls Mobility Scale; range, 12; higher score indicates greater mobility; LSST: Functional Status Test; range, 3–24; higher score indicates greater satisfaction with life; SF-36 PCS, SF-36 physical component summary score; SF-36 MCS, SF-36 mental health component summary score.
K. Peri et al.

An initial personal approach to the individual [3, 9]. Even isolated residents were able to participate, suggesting that dissemination of this programme would be possible.

Recent randomised controlled trials have found inconsistent effects of physical training on physical performance in institutionalised older people. There is evidence to support physical training having a positive impact on muscle strength, aerobic capacity, flexibility and balance [9–11]. Exercises to improve strength, balance and endurance were included in the current programme; however, the intensity may not have been sufficient to result in measurable change in physical performance outcomes. In addition, the mobility measures used may not have been sensitive enough to show small but important changes in physical function. These small changes may have resulted in the observed impact on health status as measured by the SF-36 [9].

To our knowledge, this is one of a few studies to use functional ‘goal’-driven task activities, proven in community dwelling older people [23] to improve physical function in residential care. Goal setting is the most influential theory of human motivation [15, 28] and the use of visual activities as exercise acceptable to older people, and has potential for long-term compliance [29].

Workforce issues that have plagued the long-term care industry for a number of decades may have had a major impact on the ability of the care staff to continue the programme in a sustained way [30]. This may have contributed to the slow-down in improvement of the intervention group during the second 3 months of the study. This programme was designed to be sustainable but perhaps needs increased staff involvement for transfer of skills and enthusiasm to have a long-term impact.

Limitations

The sample size in this trial was small and relevant, but important small changes may not have been detectable such as changes in physical function. Further studies with larger sample sizes are required to verify this result. Generalisability of this result is limited by the volunteer participation of the homes. The analysis of this trial could be criticised for conducting multiple comparisons; however, the SF-36 subscales, presented for clarity, contribute to the main outcome, the PCS score. In addition the contamination observed limited internal validity of the study.

In conclusion, maintaining the physical capacity to meet ordinary and unexpected demands of ADL should be the goal for many older people living in residential care. This goal-setting functional exercise programme shows promising results requiring replication and may offer a positive option for those in long-term care facilities.

Acknowledgements

The authors would like to acknowledge the residential care home industry which has contributed financial support: Sue Mellor (deceased, 2004), Michelle Gunnderson-Reid assisted in collecting the data; a special acknowledgement to staff and residents who consented to participate in the trial. Review of the manuscript in preparation was provided by Claire Robertson and Stephen Battersby.

Conflicts of Interest

There are no conflicts of interest.

Funding source

The Auckland Medical Research Fund (AMRF) and the Auckland University Research Committee supported this project by providing project grants.

Key points

- Older people experience decline in physical activity after entry into residential care.
- Increasing habitual exercise can assist older people in maintaining functional performance.
- This study shows that using a functional ‘goal’ and an exercise programme that is incorporated into the residents’ ADL may be more acceptable to frail older residents in improving their health status.

References

Appendices

Controlled trial in residential care facilities


Received 4 December 2004; accepted in revised form 19 June 2007

63
## Appendix 10: Resident goals

Appendix Type of Goals set by residents after enrollment in promoting independent living intervention

<table>
<thead>
<tr>
<th>Type of Goal</th>
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### Appendix

Type of Goals set by residents after enrollment in promoting independent living intervention

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