



MONASH University

**Engaging and achieving in later life:
The importance of, and determinants affecting
occupational participation with older adults, following
discharge from hospital.**

Elizabeth Pritchard

Masters in Occupational Therapy (UniSA)

Diploma in Occupational Therapy (NZ)

Certificate Adult Teaching (Level V, NZ)

A thesis submitted in fulfilment of the requirement of the

Doctor of Philosophy

(Thesis by Publication)

July 2014

Supervisors:

A/Prof Terry Haines Department of Physiotherapy Victoria Australia,

A/Prof Ted Brown Department of Occupational Therapy,

Dr Anna Barker Department of Epidemiology and Preventive Medicine,

Monash University - Melbourne Australia

Copyright Notices

Notice 1

Under the Copyright Act 1968, this thesis must be used only under the normal conditions of scholarly fair dealing. In particular no results or conclusions should be extracted from it, nor should it be copied or closely paraphrased in whole or in part without the written consent of the author. Proper written acknowledgement should be made for any assistance obtained from this thesis.

Notice 2

I certify that I have made all reasonable efforts to secure copyright permissions for third-party content included in this thesis and have not knowingly added copyright content to my work without the owner's permission.

Table of contents

Table of contents	i
Executive summary	v
General Declaration.....	vii
Acknowledgements	x
Conference Presentations throughout candidature	xii
List of tables.....	xiv
List of figures	xvi
Equations.....	xvii
List of appendices	xviii
Glossary	xix
Abbreviations.....	xxi
Introduction.....	xxii
1 Context of older adults and participation	1
1.1 Précis	1
1.2 Ageing	1
1.3 Ageing and health outcomes	2
1.3.1 Physical and cognitive decline.....	2
1.3.2 Incidence of falls in older adults	3
1.3.3 Effects of hospitalisation on participation	4
1.3.4 Health system burden.....	6
1.3.5 Potential cost impact of falls on health expenditure.....	6
1.4 Participation as a means to improve physical and mental wellbeing.....	7
1.4.1 Previous definition of participation.....	7
1.4.2 Limitations of the ICF framework.....	8
1.4.3 Alternative definitions of participation.....	9
1.4.4 Models of participation identifying the factors impacting upon it.....	9
1.4.5 Studies that have used these occupational principles	11
1.4.6 Definition of participation for the purpose of this thesis	12
1.4.7 The outcome elements of participation.....	13
1.4.8 Measuring participation	14

1.5	Conceptual model of occupation and participation	15
1.5.1	The Canadian Model of Occupational Performance and Engagement (CMOP-E)	15
1.6	Summary of participation	16
1.7	Introduction to study 1	17
	Falls prevention programmes and participation	18
1.7.1	Abstract	21
1.7.2	Introduction	22
1.7.3	Method	23
1.7.4	Results.....	27
1.7.5	Discussion.....	32
1.7.6	Conclusion.....	37
1.8	Summary of chapter one	38
2	Volition and participation	39
2.1	Précis.....	39
2.2	The importance of volition for participation	39
2.2.1	What is volition	39
2.2.2	How does volition differ from motivation?	41
2.2.3	The Model of Human Occupation (MOHO).....	43
2.2.4	Summary of volition.....	45
2.3	Measuring volition.....	46
2.3.1	Summary of volition instrumentation.....	50
2.4	What is the importance of being able to measure volition amongst older adults?	50
2.4.1	Additional factors that influence participation	51
2.5	Intent of thesis.....	53
2.5.1	Primary research question.....	53
2.5.2	Mapping of studies to research aims	54
2.6	Structure of thesis	55
2.7	Summary of chapter two.....	56
3	Methodology of studies.....	58
3.1	General Methods.....	58
3.1.1	Overview.....	58
3.2	Research project 1: studies 2, 3, and 4.....	61
3.2.1	Design.....	61

3.2.2	Participants	61
3.2.3	Instrumentation.....	62
3.2.4	Procedure.....	66
3.2.5	Analysis	69
3.2.6	Ethical considerations.....	74
3.3	Research project 2: study 5.....	75
3.3.1	Design	75
3.3.2	Participants	75
3.3.3	Instrumentation.....	76
3.3.4	Procedure.....	79
3.3.5	Analysis	81
3.3.6	Ethics	83
3.4	Information management	85
3.5	Summary of chapter three.....	85
4	Determinants of participation.....	86
4.1	Précis	87
4.2	Published article 2	90
4.2.1	Abstract	90
4.2.2	Introduction.....	91
4.2.3	Methods.....	92
4.2.4	Results	97
4.2.5	Discussion	102
4.2.6	Conclusion	106
4.3	Summary of chapter four	106
5	Construct validity of the Volition Scale.....	107
5.1	Précis	108
5.2	Published article 3	111
5.2.1	Abstract	111
5.2.2	Introduction.....	112
5.2.3	Methods.....	116
5.2.4	Results	119
5.2.5	Discussion	122
5.2.6	Conclusion	124
5.3	Summary of chapter five.....	125

6	Associations between participation and volition.....	126
6.1	Précis.....	127
6.1.1	Abstract	130
6.1.2	Introduction	132
6.1.3	Methods.....	134
6.1.4	Results.....	136
6.1.5	Discussion.....	140
6.2	Summary of chapter six	143
7	Enablers of, and barriers to, participation	144
7.1	Précis.....	145
7.2	Addendum to qualitative study (not reported in study 5).....	149
7.3	Summary of chapter seven.....	155
8	Discussion and conclusion	156
8.1	Summary of findings	156
8.2	Synthesis of results	159
8.3	Implications for clinical practice of health professionals	163
8.3.1	Screen for <i>depressive symptoms</i> with appropriate action.....	164
8.3.2	Identify <i>falls history</i> (previous 12 months) with appropriate action...	165
8.3.3	Screen for <i>volition</i> of activities and select those with higher levels ..	165
8.3.4	Identify the client's <i>personal life approach</i> and instigate strategies for building optimism and resilience	166
8.4	Implications for policy	167
8.5	Limitations of the completed studies and lessons learned.....	169
8.6	Implications for future research	170
8.7	Summary	172
9	Appendices	192

Executive summary

Ageing has been identified as a critical area of global health concern due to the projected numbers of people living longer. With increased age there is a likelihood of physical and cognitive decline, which in turn can lead to decreased participation of daily activities. Decline in participation for older adults has been identified as leading to compromised physical and mental health (including social isolation and depression) and can create an increased demand on health services. Participation (within one's personal context and environment) in daily activities and occupations (all the things that people do in a day) is important for humans and perpetuates physical and psychological health and wellbeing.

A stay in hospital for older adults following a significant health event can negatively impact their level of participation and can perpetuate a decline in their health status (physical or mental). Health professionals aim to support and increase return to participation in previous activities or occupations through rehabilitation programmes yet little is known about the determinants of participation and how the psychological approach of volition (the thinking process to elicit action) can be considered and enhanced in this recovery. Volition includes three concepts of i) personal causation – self-belief that one can achieve the activity, ii) values – being engaged in activities that are important to the person's beliefs and values, and iii) interests – in the activities with a sense of enjoyment and satisfaction. There is a paucity of evidence that profiles participation of older adults living in the community, the impact of hospital on participation levels once discharged, the impact of volition on participation, and the enablers of, and barriers to, participation in activities or occupations following a stay in hospital.

This thesis addressed the question of how participation in daily activities (occupational participation) was impacted following hospitalisation and explored why this occurs. A series of five studies were completed including a systematic review with meta-analysis to explore the impact of falls prevention interventions on participation amongst older adults (a high risk area for ageing adults), two cross-sectional studies to identify the determinants of participation and the associations between participation and volition, examination of psychometric

properties for the newly developed *Volition Scale*, and a qualitative study to identify enablers of, and barriers to, participation following hospitalisation amongst older adults. The findings suggest that health professionals need to consider the psychosocial aspects of older adults when planning interventions to increase participation after a stay in hospital. These include screening for depressive symptoms and level of volition, awareness of falls history (incorporating fear of falling again), and identification and development of their personal life approach (optimistic or pessimistic), to optimise occupational participation following hospitalisation with an aim of increasing long-term health and wellbeing.

General Declaration

Monash University

Declaration for thesis based or partially based on conjointly published or unpublished work

General Declaration

In accordance with Monash University Doctorate Regulation 17.2 Doctor of Philosophy and Research Master's regulations the following declarations are made:

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes three original papers published in peer reviewed journals and two submitted publications. The core theme of the thesis was to explore how participation in daily activities (occupational participation) was impacted following hospitalisation and why this occurs. The studies also investigated the role of volition in the loss and recovery of participation in activities and occupations amongst older adults who have recently been discharged from hospital. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the candidate (a registered occupational therapist), working within the Faculty of Medicine, Nursing and Health Sciences (Physiotherapy Department) under the supervision of Associate Professor Terry Haines.

[The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research.]

In the case of the five chapters that contain publications (of a total of eight), my contribution to the work involved the following:

Thesis chapter	Publication title	Publication status*	Nature and extent of candidate's contribution
1	The impact of falls prevention on participation in occupations of older adults following discharge: A systematic review and meta-analysis.	Published	80% Systematic search, short listing of articles, extraction of data, calculation of analysis, cross-checking of data, write up of paper, submission to journal with subsequent revisions.
4	Factors impacting the household and recreation participation of older adults living in the community.	Published	80% Data gathering, extraction of data, calculation of data analyses, write up and submission of paper with subsequent revisions.
5	Examining the construct validity of the Volition Scale (VoS) with community-dwelling older adults using the Rasch Measurement Model.	Submitted	80% Data gathering, extraction of data, calculation of data analyses, write up and submission of paper/ revisions.
6	Exploring the association between volition and participation in daily life activities with older adults, living in the community.	Published	Data gathering, extraction of data, calculation of data analyses, write up and submission of paper/ revisions
7	Enablers of, and barriers to, participation in daily activities from the older adults' perspective following discharge: A qualitative study.	Returned following revision	Recruitment, data gathering (interviews), thematic analysis, cross checking of analysis, write up and submission of paper and subsequent revisions.

I have presented publications in word format and renumbered sections of submitted or published papers, in order to generate a consistent presentation within the thesis.

Signed:  Date: 08 July 2014

Acknowledgements

This thesis came about from my passion of working with people in rehabilitation to be engaged in activities that hold meaning to the individual, thereby increasing participation. It is my aim that the findings can be translated into clinical practice so that further advancements can be made with the partnership between health professionals and clients, in order to optimise health outcomes amongst older adults.

There are a number of people who have been instrumental in supporting and assisting me throughout the three years of the study journey and I would like to acknowledge them. Thank you to my friends and family who supported my decision to move countries and pursue this mission. I would especially like to thank my best friend and partner throughout this journey, Christine Burns. You have stood by me throughout this time with encouragements, philosophical debate, chastisements (when I doubted myself), and have maintained a fantastic environment of happiness and fun throughout this time.

To my supervisory team I extend my grateful thanks. To Associate Professor Terry Haines - for your guidance throughout this time including the many difficult and thoughtful questions that you posed in order to develop my critical thinking and writing skills. You have a wonderful way of taking a large complex concept in which you identify the central facts in two to three sentences, which continues to astound me. This has been a time of great personal and academic growth that you have precipitated. Associate Professor Ted Brown - thank you for the many practical ways in which you supported me in the initial transition from countries to a foreign environment. It was a major task for me to undertake and your personal support during this time was incredibly valuable. Also for the ongoing input with rapid response to the large number of written ideas, questions and manuscripts that required guidance along the way. To Dr Anna Barker who joined our supervision team after the first year - for the amazing skills that you have in using structure within your work so that the ideas and discussion can shine through with clarity. I have learned much from you, received wonderful positive and critical feedback throughout the process, and I have valued your input greatly along the way.

Finally, thank you to Caroline Sly who has assisted with positive messages, delicious cooked dinners, and with the editing of the final product. And to all the people I have encountered throughout this journey who have contributed in some way. From fellow colleagues assisting with data gathering, formulating ideas through conversation, or feedback on my writing, to the wonderful people I had the privilege to interview and glean an insight into their lives and experiences on which much of this work is based. I thank you.

Conference Presentations throughout candidature

Pritchard, E. (2012). Understanding occupational participation post-discharge in adults 65 years and over and how this relates to falls interventions. Paper presented at the *New Zealand Association of Occupational Therapists, Māramatanga Hou: Fresh Perspectives*, New Zealand, 19-21 September.

Pritchard, E. (2012). Occupational participation and falls prevention with older adults, following hospitalisation: PhD by publication. Paper presented at the *Higher Degree by Research Seminar - Monash University*, Melbourne, 10 July.

Pritchard, E. (2012). Falls interventions and participation in older adults post-discharge: Systematic review and meta-analysis. Paper presented at the *Higher Degree by Research Festival - School of Primary Health Monash University*, Melbourne, 22 November.

Pritchard, E., Brown, T., & Haines, T. (2012). Falls interventions and participation in the post-discharge population: Are they related? Paper presented at the *5th Biennial Australian and New Zealand Falls Prevention Conference*, Adelaide, 28-30 October.

Pritchard, E., Brown, T., & Haines, T. (2013). Participation and falls interventions in the post-discharge population: A systematic review and meta-analysis. Paper presented at the *Occupational Therapy Australia National Conference*, Adelaide, 24-26 July.

Pritchard, E., & Hopkins, J. (2013). Exploring alternate world views and responding to the challenge! Paper presented at the *Occupational Therapy Australia National Conference*, Adelaide, 24-26 July.

Pritchard, E., Brown, T., Barker, A., & Haines, T. (2013). Examining the construct validity of the Volition Scale with community-dwelling older adults: Rasch Measurement Model. Paper presented at *Victorian Allied Health Research Conference*, Melbourne, 28 March.

Pritchard, E., Brown, T., Barker, A., & Haines, T. (2014). Occupational Participation Framework for Older Adults': A framework for engaging in occupations following hospitalisation. Poster presented at the *World Federation of Occupational Therapists Congress*, Japan, 18-21 June.

Pritchard, E. (2014). Creating a reflective future in occupational therapy practice.
Paper presented at the *World Federation of Occupational Therapists*
Congress, Japan, 18-21 June.

List of tables

Table 1.1: Study demographics and intervention characteristics identified

Table 1.2: Outcomes of PEDro analysis of bias

Table 2.1: Overview of volition scales identified following a scan of literature

Table 2.2: Mapping of studies to research projects, aims, chapter and publications.

Table 2.3: Chapter overview of content

Table 3.1: Summary of studies 2-5 matching research questions

Table 3.2: Instrumentation used in each study

Table 3.3: Demographics collected for each study

Table 3.4: Analysis methods of studies

Table 3.5: Participant recruitment results

Table 3.6: Scales used in study 5

Table 3.7: Example of participation in activities, pre- and post-hospital

Table 3.8: Demographics collected for study 5

Table 3.9: Matrix coding of factors (example)

Table 4.1: Description of explanatory (independent) variables used for analysis

Table 4.2: Duration of participation in specified activities

Table 4.3: Results for regression of participation (Household/Recreation with explanatory variables)

Table 5.1: The Volition Scale.

Table 5.2: Results of Item statistics from Rasch Analysis

Table 5.3: Sample norms for volition

Table 6.1: Regression results simple linear regression (participation with volition)

Table 6.2: Multiple regression of items with significant volition scores using original and transformed data

Table 6.3: Final model results: participation (in five significant activities) with volition, gender, and living situation

Table 6.4: Levels of participation and volition for shopping (household subscale) and walking (recreation subscale)

Table 7.1: Demographic summary

Table 7.2: Demographic matrix - correlation coefficients (r value)

Table 7.3: Summary of falls efficacy, physical health, mental health, volition, level of participation (n=21)

Table 8.1: Summary of study findings

List of figures

Figure 1.1: Magnitude of projected population growth aged 60 and over: World and Development regions, 1950-2050

Figure 1.2: The falls activity cascade for older adults

Figure 1.3: Conceptual flow of the impact of hospitalisation on participation and health outcomes for older adults

Figure 1.4: Projected spending on age related health costs for Australia, the United States and the United Kingdom

Figure 1.5: International Classification of Functioning, Disability and Health (ICF)

Figure 1.6: The Canadian Model of Occupational Performance and Engagement

Figure 1.7: The components of the Model of Human Occupation leading to participation and occupational adaptation

Figure 1.8: The hierarchy of occupation as elements of participation

Figure 1.9: Basic assumptions of the importance of occupations

Figure 1.10: Flow diagram of selection process of articles

Figure 1.11 a): Less than six months post-discharge

b): Six months or more post-discharge

Figure 2.1: The components of volition leading to interpretation of thoughts and feelings

Figure 2.2: Proposed motivation and volition process of participation

Figure 2.3: Factors influencing wellbeing and positioning of studies

Figure 3.1: Thematic analysis process

Figure 4.1: Frequency of participation in each activity (times in a typical week)

Figure 5.1: Summary of rating scale structure of the three volition item responses on the Likert rating scale (1 - strongly agree to 5 - strongly disagree)

Figure 7.1: Personal life approach

Equations

Equation 3.1: Simple linear regression

Equation 3.2: Multiple linear regressions

Equation 3.3: Rasch measurement model

List of appendices

- Appendix 1.1: The CMOP-E – copyright permission to use diagram
- Appendix 1.2: Components of the MOHO – copyright permission to use diagram
- Appendix 1.3: Participation measurement tools identified by Fairhall et al, 2011
- Appendix 1.4: PDF of published article
- Appendix 1.5: Search terms used for systematic review
- Appendix 2.1: The Occupational Questionnaire
- Appendix 2.2 a, b, c, d, e: Conference presentations during candidature
- Appendix 3.1: Authority to use the online scoring for SF-12 v2
- Appendix 3.2: Short Form-12 version 2
- Appendix 3.3: The Short Geriatric Depression Scale (GDS15)
- Appendix 3.4: The Phone-FITT (1) (adapted format for telephone study)
- Appendix 3.5: The Volition Scale
- Appendix 3.6: Ethical approval letter – studies 2, 3, 4
- Appendix 3.7: Modified Falls Efficacy Scale
- Appendix 3.8: Semi structured interviews questions with prompts if required.
- Appendix 3.9: Thematic mind map example – qualitative analysis
- Appendix 3.10 a, b: Coding comparison 1 and 2
- Appendix 3.11: Ethical approval letter – study 5
- Appendix 3.12: Consent form [NB Southern Health changed to Monash Health 2013, Elizabeth Rowland reverted to her maiden name of Pritchard after this was approved].
- Appendix 4.1: PDF published article
- Appendix 5.1: Submission of Rasch paper for publication
- Appendix 6.1: PDF published article
- Appendix 7.1: Submission of qualitative paper for publication

Glossary

Activities

The subjective and objective components required for performance of occupations (2). For example cooking, budgeting, and gardening, which are components of self-care, household management and leisure.

Fall

The definition of a fall adopted for this thesis is "an unexpected event in which the participants come to rest on the ground, floor, or lower level" which is commonly used throughout the Cochrane reviews pertaining to prevention of falls (3).

Health professionals

This relates to the broader range of healthcare workers who are involved in providing assistance to clients in the recovery journey for clients. At times *clinician* is used within this thesis and refers to registered practitioners responsible for assessment and intervention with individuals. These terms are mostly used interchangeably throughout this thesis due to the intended targeting of the published study results.

Hospitalisation

A stay in hospital that was preceded by a significant health event.

Motivation

Is a term that has varied interpretations and has been defined as the intention to perform an activity or "a hypothetical construct describing the inner and/or outer forces responsible for the triggering, guiding, intensity, and sustaining of behaviors" (4).

Occupations

Groups of daily everyday life activities that are performed, named, organised that are given value and meaning by individuals and/or a culture; everything that people do on a daily basis which are embedded within the individual's own personal context and environment (e.g. personal care, productivity, leisure activities) (5).

Occupational disruption

A temporary or transient disruption to daily occupations due to a significant life event (e.g. an illness or stay in hospital) (6).

Occupational participation

Engaging in occupations (work, leisure, or activities of daily living) that are part of one's socio-cultural context and that are desired and/or necessary for one's wellbeing (7).

Older adults

Generally identified as people who are 65 years and over (8).

Participation

A broad definition regarding engagement in daily life activities that incorporates the psychological aspects of thinking and volition as well as the psychosocial aspects of mental health (e.g. anxiety, depression, social connectedness) (5). This is broader than the definition found within the International Classification of Disability, Health and Function as "involvement in a life situation" (9).

Volition

Volition is the mental thinking process which translates the individual's level of intention (or motivation) into action (3). It is identified as an essential component for individuals to carry out daily activities (e.g. household and leisure)(7). Volition involves three components i) *personal causation* or the degree in understanding self-ability; ii) *values* or meaning of the activity to the individual as people are more likely to engage in activities that are meaningful and align with personal values; and iii) level of *interests* a person has in the activity in order to perform it (10).

Abbreviations

AOF	Assessment of Occupational Functioning
CI	Confidence Interval
CMOP-E	Canadian Model of Occupational Performance and Engagement
GDP	Gross Domestic Product
GDS15	Short Geriatric Depression Scale
ICF	International Classification of Disability, Health, and Function
LOC	Locus of control
MFES	Modified Falls Efficacy Scale
MOHO	Model of Human Occupation
MOHOST	Model of Human Occupation Screening Tool
N	Study sample size
OQ	Occupational Questionnaire
P	Probability value
PLA	Personal life approach
R ²	Proportion of variation explained
RCT	Randomised controlled trial
RMM	Rasch Measurement Modelling
SD	Standard Deviation
SE	Standard error
SF-12v2	Short Form-12 version 2
VCQ	Volitional Component Questionnaire
VQ	Volitional Questionnaire
VoS	Volition Scale

Introduction

This project emerged from a concern of current rehabilitation health practices with older adults that appear to be limited in their effectiveness of increasing participation in daily activities following hospitalisation. A series of studies were scoped in order to understand more about the factors that contributed to participation in daily activities for older adults including the enablers of, and barriers to, participation. The five completed studies have been presented within this thesis in order to address some of the areas not yet investigated with an aim to contribute to the knowledge base of health professionals.

The primary question was: What is the impact of hospitalisation following a significant health event (that required admission to hospital), on participation of older adults who return to live at home? The specific aims were to identify demographic, physical and psychosocial determinants associated with participation in daily activities of community-dwelling older adults (study 2); examine construct validity of the Volition Scale administered to community-dwelling older adults (study 3); explore the association between volition and participation in daily activities amongst older adults living in the community (study 4); explore enablers of, and barriers to, participation in daily activities amongst older adults who have returned home following hospitalisation (study 5).

The thesis is structured with chapter one presenting an overview of the background of the problem within the ageing population, explanation of the term participation, exploration of the underpinning conceptual models, and documents the first study completed (systematic review with meta-analysis). Chapter two explores volition (the thinking processes to elicit action) as an important component of participation, and the conceptual model that supports this understanding. It also presents the specifics regarding the structure and intent of the thesis. Chapter three provides general methods regarding the four subsequent studies to explore older adults in two scenarios; community-dwelling and post-discharge. Chapters four to seven present the additional publications that arose from each of the completed studies. Chapter eight illuminates the synthesis of findings from all of the studies, research/clinical implications and presents the overall conclusion. It is envisaged that the results of these studies will

be used to influence practice of health professionals in their rehabilitation programme planning with older adults following a stay in hospital.

1 Context of older adults and participation

1.1 Précis

Chapter one presents an overview of the thesis by identifying; the background of the problem investigated, definitions of participation, the conceptual models used that underpinned this project, and the systematic review where the investigation began. The research problem identifies the critical factors of ageing, the incidence of falls, and the effect of hospitalisation on participation in daily activities amongst older adults. Participation is explored within the current understandings of the usage of this term. It is also defined regarding how it is used and measured within this thesis. A model of occupation and participation is presented and discussed as to how it shaped conceptual understanding and the language of this project. Study one (systematic review with meta-analysis) is then presented as the first of five. This study investigated the impact of falls intervention programmes on participation amongst older adults and has been published in a peer-reviewed journal.

1.2 Ageing

Engaging in, and achieving participation in later life presents a challenge for individuals as well as health professionals. There is global concern in the unprecedented accelerated growth in the ageing population (11), demanding urgent consideration for future planning of health interventions to address the increasing service demand (12-14). The trajectory of the number of people over 65 has more than tripled in the last six decades and is expected to continue towards a population of two billion by 2050 (8) (Figure 1.1). This presents future challenges on health resources and needs to be proactively addressed (8, 11, 15).

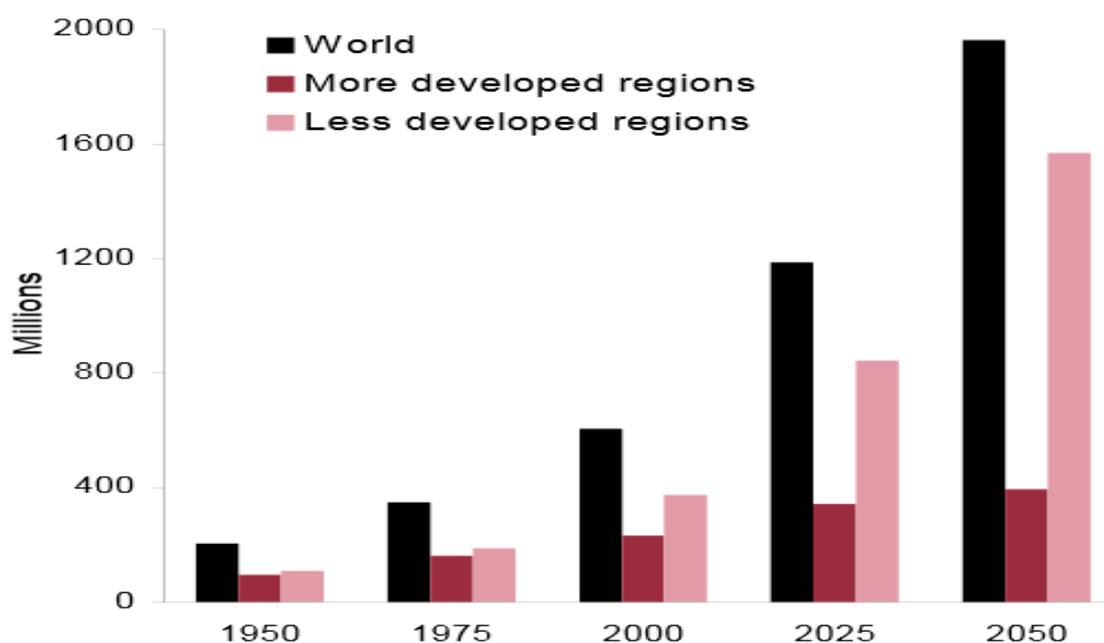


Figure 1.1: Magnitude of projected population growth aged 60 and over: World and Development regions, 1950-2050 (Raw data).

From Department of Economic and Social Affairs Population Division. (2002). World Population Ageing: 1950-2050: United Nations.

1.3 Ageing and health outcomes

1.3.1 Physical and cognitive decline

People commonly encounter a decline in physical and cognitive abilities as they age due to increased susceptibility to chronic disease (12-14). This may manifest in outcomes such as; falls, hospitalisation and social disconnection (14, 16). Physical decline can often be experienced in the areas of strength and agility where performing specific tasks can become more difficult to accomplish (12, 13). Cognitive decline, due to ageing, can impact on decision making abilities, planning and executing tasks, and memory. It is also linked to the emotional reactions or interpretation of events and situations (12). This can lead to increasing the risk of anxiety and depression through: further reduced levels of physical ability; decreased participation in daily activities; and social isolation (13). These negative health outcomes place upward pressure on both health and social services (13).

1.3.2 Incidence of falls in older adults

It is well documented that falls have many deleterious consequences for both the individual and health system and therefore are a global public health concern (17, 18). The period prevalence of falls has been reported to be that of one in three adults who live in the community (65-80 years) fall per year (19, 20). This increases with age as one in two people fall annually when over 80 years of age (19-21). A fall can lead to a "cascade" effect of reduced balance, decreased activity and functional decline which can perpetuate a negative health spiral and possible hospitalisations (Figure 1.2). The probability of a person falling again following a hip fracture (six months post-discharge) is more than 50% with an increased rate in hospital readmissions also likely (22). The risk of falling increases with hospitalisation (23), the presence of comorbidities (24) and is also heightened in the immediate post-discharge time period (25). This establishes falls as an important outcome to consider with ageing.

Falls interventions thus far in Australia have not had the expected impact of reducing incidence. The number of hospital admissions (due to fall related injuries) has continued to rise over the last decade despite increased expenditure for falls prevention research and interventions (26). The estimated number of patient days for hospital care (directly attributable to fall-related injuries) has doubled from 0.7 million patient days in 1999-2000 to 1.4 million patient days in 2010-2011 (26). This trend has also been confirmed in international health figures (27, 28). Falls amongst older adults are still on the increase despite the extent of resources being mobilised, and are linked with physical and/or cognitive health outcomes as well as participation in life activities (29).

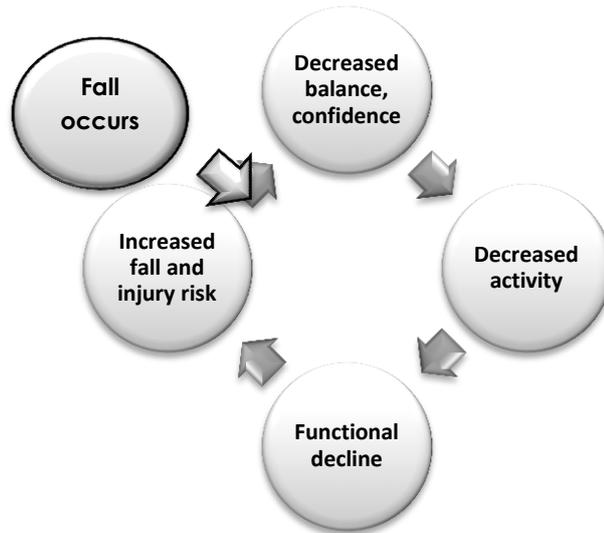


Figure 1.2: The falls activity cascade for older adults

(adapted from A Barker presentation, 2013 with permission)

There are considerable psychological consequences that have been reported to occur alongside the substantial physical sequelae of falling. These may include fear of falling (often experienced once a fall has occurred, and may restrict attempts to participate in activities) (30), anxiety or depression (31), and social isolation. These are all associated with reduced participation (32, 33). Previous authors have recognised that psychosocial improvement may not necessarily follow physical improvement post-discharge following a fall (34). Health professionals need to consider both physical and psychological aspects of a person who has fallen in order to ameliorate the spectrum of negative health outcomes that can follow (34, 35).

1.3.3 Effects of hospitalisation on participation

Older adults who experience a significant health event (requiring admission to hospital) frequently face a negative impact on participation (16). This may reciprocally lead to, and is influenced by undesirable health outcomes (36). These outcomes may incorporate compromised physical and/or mental health and increased potential for falls. This can lead to a negative health spiral such as readmission and comorbidities (16, 37). Alternatively, a return to ongoing community participation in daily activities may be experienced when the health spiral is addressed in an effective and timely manner. Whether there is a positive or negative outcome is likely to be dependent on a multitude of factors (e.g.

diagnosis, treatment options, home environment, and social supports). This may also include individuals' response to their physical/mental health status and interventions they receive. The relationship between hospitalisation, the impact on participation, readmission and health outcomes that are attained, is conceptualised in Figure 1.3.

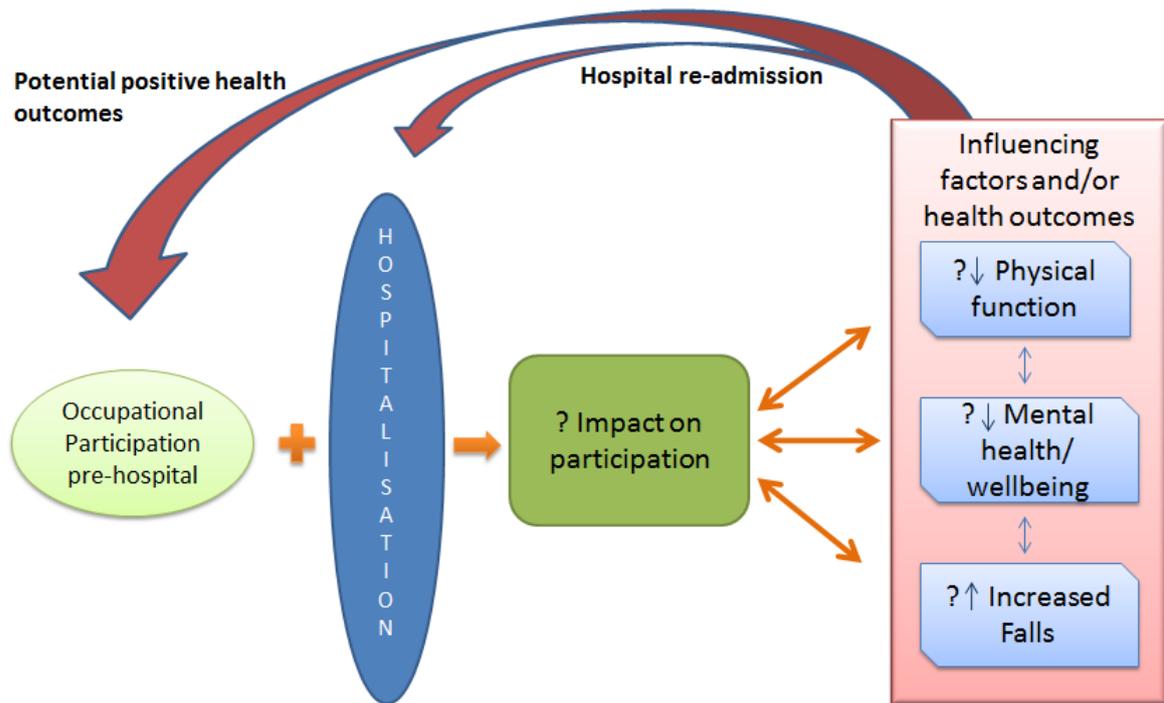


Figure 1.3: Conceptual flow of the impact of hospitalisation on participation and health outcomes for older adults

Previous studies have identified that participation levels can be improved. One randomised control trial of sedentary community-living older adults (n=149) in the United States explored the effect between an activity programme (participants' contribution to a community-based activity programme for 15 hours per week in schools) and executive functioning. The study reported improved levels of executive function (speed of processing) and memory ($p < .05$) with implications for increasing physical independence (38). A further cohort study of older adults (60-91 years) community-living (n=292) in the United States investigated the relationship between long-standing meaningful/productive occupations and satisfaction, and also successful ageing (39). That study reported an association

between higher levels of performance of meaningful occupations and: higher levels of life satisfaction ($p = .01$); and increased levels of successful ageing ($p = .01$) (39). These studies indicate that aspects of participation can be improved in community-dwelling older adults. However, these studies have not been carried out with the post-hospitalisation population.

1.3.4 Health system burden

Ageing populations have been identified as a potential health burden as their health needs increase (40). The amount of health care resource that individuals consume increases with age (40). As people are living longer this increases the number of older adults likely to require health interventions, which also increases service demand. Recent publications have identified that older adults (≥ 65 years) comprise 38% of hospital admissions in Australia in 2011 (41), 37% in the United Kingdom in 2011 (42) and 33% in the United States in 2007 (43). In Australia, 7% of all hospital admissions in 2011-12 comprised of people aged 85 or over, despite being only 2% of the population (41). Hospitalisation can lead to deconditioning and perpetuate the negative health cycle of physical/cognitive decline and readmission causing additional service demands (36). The ageing population is also likely to increase demand on primary, preventative health sectors, and mental health community services as individuals access community based services to promote effective healthy ageing (40).

1.3.5 Potential cost impact of falls on health expenditure

Projected costs for aged related health expenditure by 2050 in Australia were predicted to increase from 8.1% to 10.3% of the Gross Domestic Product (GDP) of health spend as at 2005 (44). In the United States, projected health costs for age related services by 2052 are expected to increase from 6.8% to 13.2% GDP (Medicaid) and from 2.6% to 6.7% of GDP (health and long-term care programmes) (45). Projected health costs spent on older adults in the United Kingdom are predicted to grow from 21.3% to 26.3% of GDP over 2017 and 2062 respectively (28) (Figure 1.4). Clearly this growth in expenditure is unable to be sustained unless changes to health services or funding are made. This presents a challenge for countries aiming to balance their budget in the light of an ageing population.

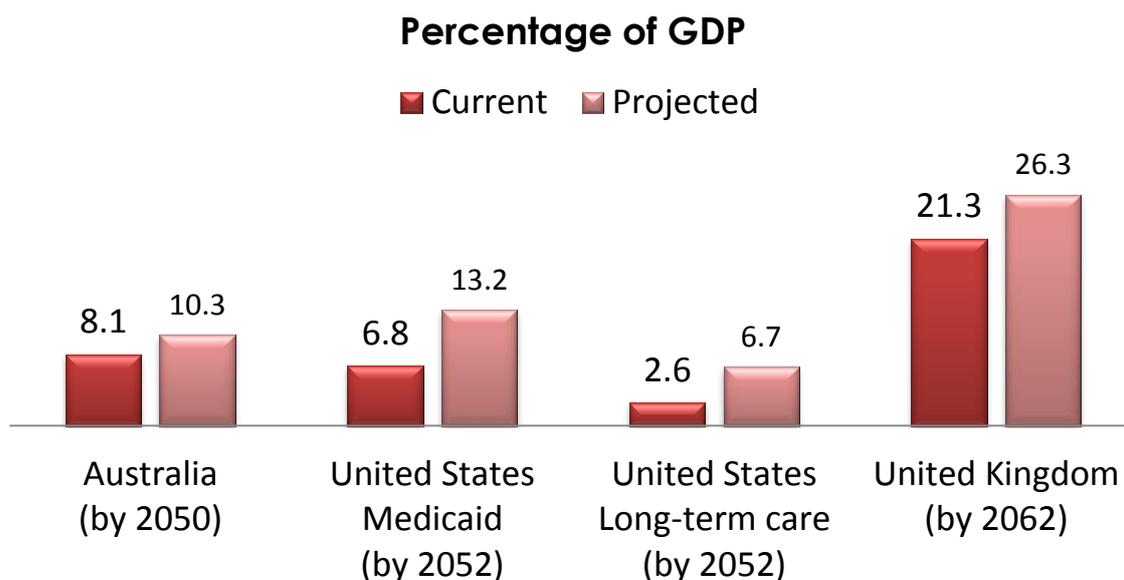


Figure 1.4: Projected spending on age related health costs for Australia, the United States and the United Kingdom.

1.4 Participation as a means to improve physical and mental wellbeing

1.4.1 Previous definition of participation

Participation is a concept that has not been used consistently in health literature (46). It has been defined within the *International Classification of Functioning, Disability and Health* (ICF) (47) as “involvement in a life situation” with varying degrees of engagement for people of all ages and cultures throughout their lifespan. The ICF is a framework that was created by the World Health Organisation as a classification system to build consistency of language for health professionals and researchers with an aim to “understand the effects of health on function” (7, 47) (Figure 1.5).

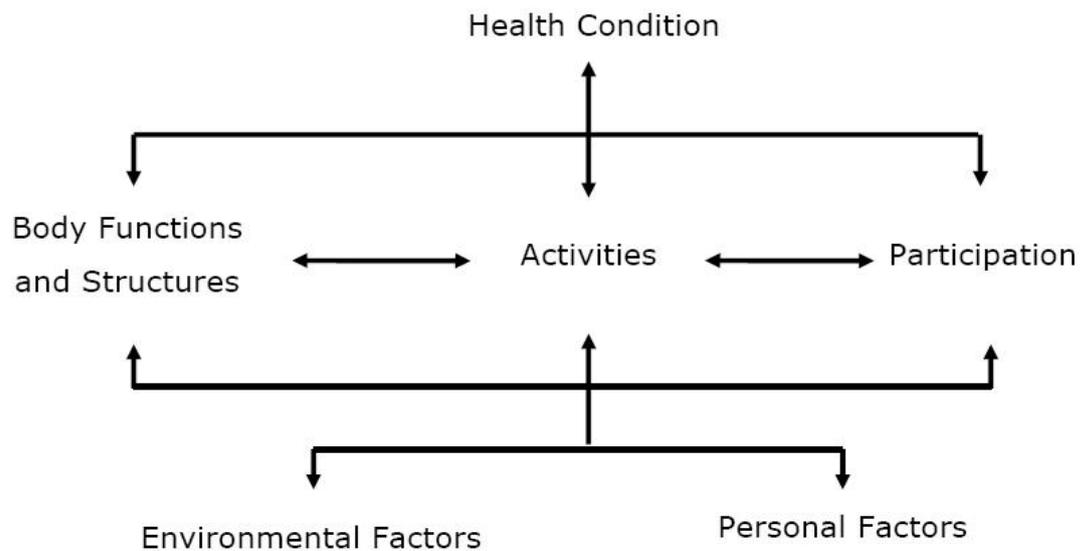


Figure 1.5: International Classification of Functioning, Disability and Health (ICF).
 From World Health Organisation. (2002). *Towards a Common Language for Functioning, Disability and Health ICF: World Health Organisation.*

Activity and participation (function) are acknowledged as important areas of people’s daily life within the ICF framework. It recognises that participation is influenced by functional abilities (body function and structure) and activities themselves within various contexts. These may also be influenced by environmental factors (e.g. physical, social, and attitudinal) and personal factors (e.g. race, gender, and coping styles). The ICF acknowledges that during the life span one may experience *participation restrictions*, or an *activity limitation* (e.g. through illness or injury). The framework describes activity limitations as “difficulties an individual may have in executing activities” and participation restrictions as “problems an individual may have in involvement in life situations” (48).

1.4.2 Limitations of the ICF framework

The ICF defines participation, activities and function (48). However, there has been criticism regarding the bio-psychosocial perspective that the ICF framework holds and the “exclusion of subjective experience and meaning” (46). It has also been noted that the ICF is focussed on **disability** rather than ability and does not consider the full extent of what inhibits or facilitates participation, nor does it provide ways to address this (46, 49). It does not recognise the nuances of **why**

limitations occur, **how** participation is experienced (subjective experience), or **how** it impacts function (46, 50).

1.4.3 Alternative definitions of participation

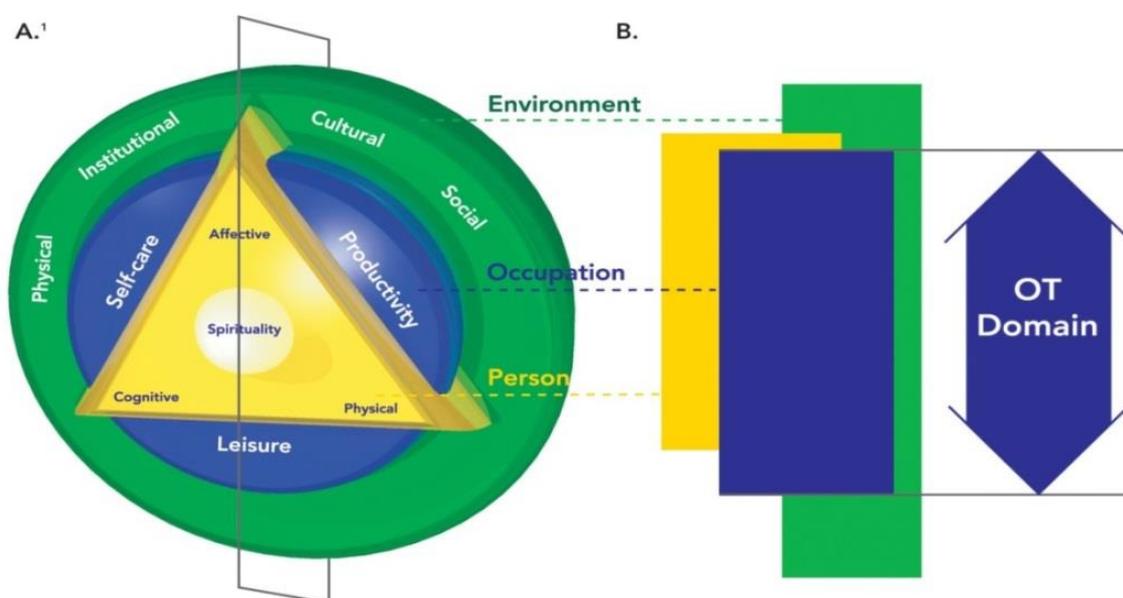
Authors in occupational therapy have extended this definition of participation from capacity to include the process of taking part or sharing something with others (51, 52). They contend that ongoing participation in occupations is a crucial need for survival and integral to maintaining the complex mechanism of health (5, 53). Additional authors have labelled this concept as *occupational participation*, which involves “engaging in work, play, or activities in daily living that are part of one’s sociocultural context and that are desired and/or necessary to one’s well-being” (5, 7). This also involves subjective interpretation by the individual of these experiences and what they mean to the individual.

Recent theories of participation extend this basic understanding of the ICF definition to explore the essence of living beyond activity limitations and performance restrictions (5, 7). These models involve psychological (mental or emotional state) and psychosocial (psychological development within a social environment) determinants of participation which have not been extensively investigated with older adults.

1.4.4 Models of participation identifying the factors impacting upon it

This thesis was based on two models of participation; the *Canadian Model of Occupational Performance and Engagement (CMOP-E)* (5) and the *Model of Human Occupation (MOHO)*(7). These models were chosen as they provide a conceptual framework for the interaction between the thinking processes for action and the physical functioning of an individual. It suggests that together, these are essential for participation. They identify the importance of considering the individual as a holistic being (physical *and* psychosocial components), where influences broader than physical ability need consideration when investigating participation. The CMOP-E describes participation as the culmination of the relationship between three dimensions: i) *person* – cognitive, affective and physical concepts with the centre being the importance of spirituality; ii) *occupation* – self-care, productivity, leisure; and iii) *environment* – cultural, institutional, physical and social (Figure 1.6). Participation occurs through

performance and engagement (action) by the person, in the occupation, within the environment (5), and is discussed in detail in section 1.4.1.



A.1 Referred to as the CMOP in *Enabling Occupation* (1997a, 2002) and CMOP-E as of this edition
 B. Trans-sectional view

Figure 1.6: The Canadian Model of Occupational Performance and Engagement.

From Townsend, E. A., & Polatajko, H. J. (2007). *Enabling occupation II: Advancing an occupational therapy vision for health, well-being, & justice through occupation*. Ottawa: Canadian Association of Occupational Therapists (with permission Appendix 1.1).

The MOHO (7) describes the concept of occupational participation as engagement in everyday activities (occupations), which incorporates the components of: *volition* – the thinking process that elicits action which includes personal causation (self-belief in ability), values, and interests; *habituation* – patterns of behaviour including habits and roles; and *physical capacity* – physical and mental capacities, and subjective experiences (Figure 1.7). The interactions between these concepts lead to participation, performance and further development of skills within the individual's environment. This creates occupational identify (the sense of who one is) and competence to action occupations (7). The concept of volition within the MOHO is discussed in detail in

section 2.3.3 as this is an area not well researched within rehabilitation programmes in health and requires in-depth discussion.

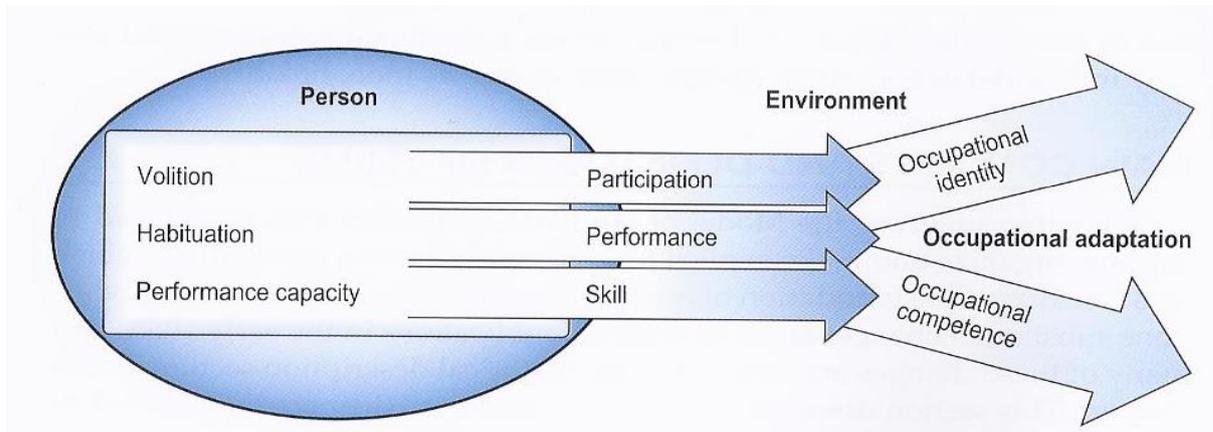


Figure 1.7: The components of the Model of Human Occupation leading to participation and occupational adaptation.

From Turpin, M., & Iwama, M. (2011). Using occupational therapy models in practice. A field guide. Toronto: Churchill Livingstone (with permission Appendix 1.2).

1.4.5 Studies that have used these occupational principles

Two studies have utilised the participation principles (as described in the occupation models) and incorporated choice of meaningful activities as a means to increase participation amongst older adults in the community. The first influential study to demonstrate the importance of increasing participation completed a three-way randomised control trial in the United States with well-elderly participants in the community (54). This investigated the relationships between participation in occupations and interactions, life satisfaction, mental health, physical functioning and general health over nine months. The interventions were; i) an occupation based self-chosen programme, ii) a social participation programme, and iii) the control group. The results reported associations between higher levels of participation and; quality of interactions ($p=.03$), life satisfaction ($p=.03$), mental health ($p=.02$), physical functioning ($p=.008$), and general health ($p=.01$) (54).

The second randomised control trial (following the intervention principles of the well-elderly trial (54)) was completed in 2012 with 450 older adults (60 – 95 years) in

the United States (55). This was a two way trial to explore the relationships between participation in personally relevant occupations with satisfaction, mental health, depression and social function. The intervention was based on personal lifestyle redesign, where the individuals were encouraged to participate in occupations on a daily basis that held personal relevance (56). Results reported higher levels of participation with; higher life satisfaction ($p=.03$), increased vitality ($p=.03$), increased mental health ($p=.03$), decreased depression scores ($p=.03$), and increased social function ($p=.04$) (55). The occupation based programme also decreased the need to access health services, improved quality-adjusted life year and was reported to be cost effective (US \$41,218 per unit) (55).

These two studies have identified the importance of participation in personally chosen meaningful activities and occupations as a way to increase participation and life satisfaction. However, rehabilitation health programmes have not yet consistently embraced these concepts.

1.4.6 Definition of participation for the purpose of this thesis

A definition of participation (broader than the ICF (48)) was developed for the purpose of this thesis. It was based on the CMOP-E (5) and MOHO (7) models due to the limited scope of participation presented in the current body of health research. Participation refers to engagement in all daily life activities which incorporates psychological aspects (e.g. anxiety, depression and thinking processes) as well as the psychosocial aspects (e.g. flourishing/thriving mental health, resilience, social connectedness) within personally experienced and interpreted contextual factors (5, 7).

Participation is presented as the interaction between observable actions (performance) and the person's interpretation of their own experiences (7, 46). Evidence suggests that participation is personalised (57) and incorporates the broad concepts of: social involvement and relationships; emotional health and wellbeing; spiritual/cultural understanding of context (including the environment); physical ability; and societal roles encompassing all activities and behaviours one engages in (6, 58). These broader concepts of participation are important for health professionals and researchers to consider when examining return to participation in activities, in order to promote overall health and wellbeing (53, 59).

1.4.7 The outcome elements of participation

The outcome elements of participation can be described in three ways; occupation, activity, and tasks (Figure 1.8). Firstly occupations; are defined as “specific chunks of activity within the ongoing stream of human behavior which are named in the lexicon of the culture” (60). They are a vehicle that enables people to contribute to society which can lead to identification of their place or role within individual cultures or communities. Occupations are often identified in three categories: self-care (e.g. personal hygiene, cooking); productivity (at work, home, or in the community); and recreation/leisure (passive or active) (5). For example the occupation of being a student or an employee (role) usually entails getting to school/work on time. This may involve management of many personal and home *activities* in order to get to school/university or work to carry out the occupational role.

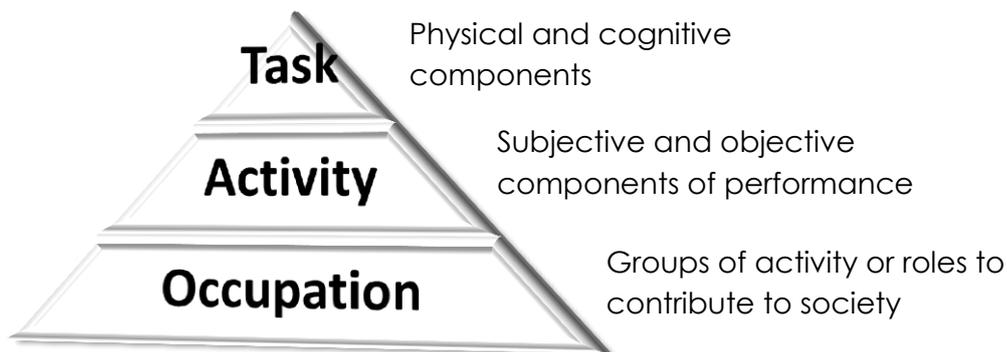


Figure 1.8: The hierarchy of occupation as elements of participation.

The second element of participation (*activities*) is described as the subjective and objective components required for performance (2). For example in order to complete the occupation of being an employee, one needs to complete a number of activities: personal hygiene routines; household management; management of transport requirements. In the same way that occupations can be broken down into activities, activities can be broken down into tasks.

The final element of participation is *tasks* which are the essential physical and cognitive components required to complete an activity (2). For example, one needs to read a timetable, walk to a station/stop, locate and select the train ticket from a bag or pocket and use it correctly in order to complete the activity of catching a train to school /work. The tasks involve; time management,

proprioception, stereognosis, hand/eye coordination, fine motor skills, general arm/shoulder movements, spatial awareness, trunk balance, and a degree of strength. These are identified as specific tasks that are required to carry out the overall activity (catch a train), which lead to the fulfilment of an occupation (student/employee) and describe the various levels of participation in daily life.

1.4.8 Measuring participation

There are a variety of measures identified in literature that claim to measure the construct of participation. This may be due in part to the diversity of definitions that have been applied. Many instruments focus on an individual's ability or capability of function to perform an activity (e.g. the Barthel index (61)), but do not identify if the person is **currently** performing this activity, how often, or how long for on each occasion. Therefore the potential ability to perform an activity on a regular basis as desired can be incongruent with how much it is actually performed. For example one may be physically capable of descending the flight of stairs to leave the apartment building; however they have not achieved this in over two months due to other factors (e.g. perception of pain, fear of being amongst people, perceived inability to use the walking frame outside). The person's ability could be scored as *high* as they are "able" to do the functional task; however participation from this broader perspective classified by duration (time) and frequency of involvement per week, is *nil*.

Participation measures should arguably be examined with a temporal component in mind (e.g. number of sessions per week and time per session) to gain an accurate reflection of current participation levels in activities. However, this has not always been the case in health. A systematic review and meta-analysis published in 2011 explored the definitions used and scales selected to measure participation (59). The study identified nine tools that met the constructs of the ICF definition of participation and was the first study to explore these measures in this way (Appendix 1.3). Of the scales identified, only three gathered a temporal component of frequency as well as duration: The Adelaide Activities Profile (62); the Frenchay Activities Index (63); and the Physical Activity Scale for the Elderly (64).

Many researchers have not defined participation beyond being a physical component of an event or activity (e.g. able to stand, able to walk 10 metres).

However an accurate definition of the term with measurement of daily or weekly engagement in activities needs to be captured, as participation (not solely function) in daily activities leads to improved quality of health and wellbeing (65).

1.5 Conceptual model of occupation and participation

1.5.1 The Canadian Model of Occupational Performance and Engagement (CMOP-E)

The CMOP-E (Figure 1.6) acknowledges the importance for humans to be engaged in meaningful activities or occupations if they are to develop and maintain health and wellbeing (5, 53, 58). The fundamentals of this model establish that humans are complex beings where their physical, cognitive, affective and spiritual components need to be considered in a holistic approach by all health services (5, 7, 53). The model espouses that humans need occupation for; survival, health as well as wellbeing, and that occupation is potentially therapeutic. This is through engagement in occupations where people are able to participate in and contribute to society (5, 51) (Figure 1.9).

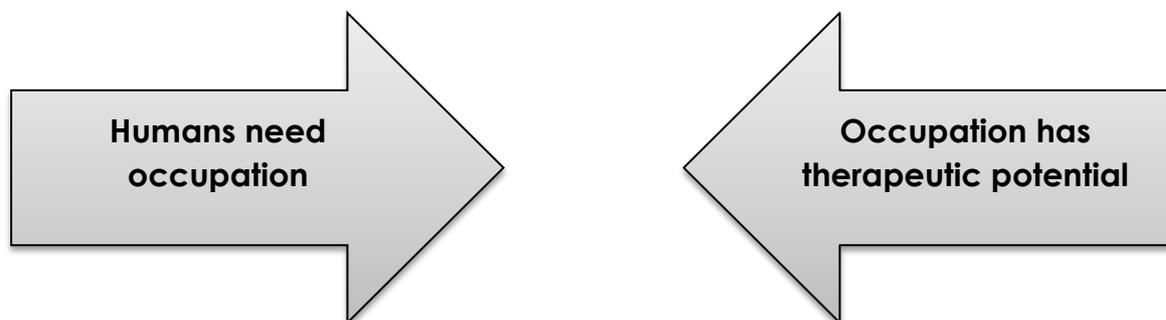


Figure 1.9: Basic assumptions of the importance of occupations

(adapted from Townsend and Polatajko, 2007, p.21)

The CMOP-E focuses on performance, engagement and occupation noting that the individual's concept of spirituality (what gives meaning to oneself' as well as understanding one's place in the world) is at the centre of the model (5).

Performance is described as carrying out an occupation and *engagement* is pertaining to involving oneself or becoming occupied (to participate) in the activity or occupation (5). The performance component is seen as a dynamic

concept where interaction occurs between the person and their unique environmental context through engagement in occupation, which acts as a 'bridge' between the two (5, 51). The environment is depicted as physical, social, cultural and institutional and is *acted upon* through occupation and may support or inhibit participation (57, 66).

The basic assumptions of the CMOP-E are recognised as: "occupation affects health and wellbeing" (either positively through engagement or negatively through lack of engagement); is a way of organising one's time to bring structure and meaning to how humans live; and that occupations are *idiosyncratic* (specific to individuals or groups) (5). This means that even within the same individual that one factor may not affect participation in two different occupations equally. The personal interpretation of the experience and engagement in the occupation and how this impacts on participation is unique to the individual.

The principles of the CMOP-E have been used in this thesis to ascertain the direction and focus regarding possible interventions with older adults in their daily lives. It provides taxonomy for examining participation in order to explain the factors of participation in order to build a collaborative approach for interventions.

1.6 Summary of participation

Participation in activities has been presented and discussed as an essential prerequisite for health and wellbeing of older adults. Various health outcomes of ageing have been provided incorporating physical and cognitive decline (including falls) that negatively impact participation levels. These negative determinants of hospital admission, readmission and the ongoing cycle of chronic disease need to be addressed in health services. Following the initial literature review of participation and older adults, it was identified that research had tended to concentrate on physical factors and not the psychosocial factors for return to participation. It was determined that this needed to be rectified by using a systematic review with meta-analysis approach as an effective and rigorous method to summarise the results to determine which falls interventions have been used and their impact on participation levels.

1.7 Introduction to study 1

A systematic review and meta-analysis (study 1) was completed to investigate the outcomes of falls interventions on participation. Falls were the initial focus of this thesis as a recognised major contributor to the burgeoning health burden of age related frailty. Falls prevention research to date had focussed on physical interventions with programmes that have addressed; exercise - balance and strength, review of medication, vitamin supplements, cataract surgery and use of assistive devices or home modifications (67). However, very few of these studies examined the broader psychosocial aspects or impact on participation in activities following hospitalisation (59). This led to the development of the first research aim:

1: To investigate the impact of falls intervention programmes on participation of older adults returning home to live, following discharge from hospital.

This study reviewed current literature to ascertain the prevalence and outcomes of randomised controlled trials that measured participation in falls interventions amongst the older adult post-discharge population. The design, methods and results are described next in the word version of the first published manuscript from the *Disability and Rehabilitation* journal (Appendix 1.4). The results are reported in the article and described: a lack of consensus of definition of participation; a breadth of tools measuring varied content; and a paucity of studies that utilised participation outcomes.

None of the studies identified in this analysis utilised participation instrumentation as a primary outcome measure, only secondary. Due to these anomalies only a small number of studies were able to be included in the final meta-analysis (n=5). However, a positive effect was identified although the effect size was small. Results indicated that falls interventions provided a positive improvement in older adults' participation levels post-discharge.

Falls prevention programmes and participation

Study 1:

The impact of falls prevention on participation in daily occupations of older adults following discharge: A systematic review and meta-analysis.

Authors: Pritchard, E., Brown, T., Lalor, A., & Haines, T.

Published in the *Disability and Rehabilitation* journal - July 2013

(Appendix 1.4).

PART B: Declaration for Thesis Chapter One

Monash University

Declaration by candidate

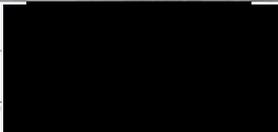
In the case of Chapter one, the nature and extent of my contribution to the work was the following:

The impact of falls prevention on participation in occupations of older adults following discharge: A systematic review and meta-analysis.	Extent of contribution (%)
Nature of contribution	
Formulation of keywords and search strategies for databases	100%
Formulation of primary outcomes and secondary outcomes of interests	100%
Short listing of articles from titles and abstracts	100%
Identification of included studies	50%
Identification of additional records from reference check of included articles	100%
Email trial authors for clarification of data and education approach/method utilised	100%
Extraction of data from the included studies	100%
Calculation/adjustment of risk ratios and effect size from raw data	100%
Analyses of primary and secondary outcomes in the included studies	100%
Cross-checking data analyses	70%
Writing up of manuscript	100%
Submission of manuscript to journal	100%
Subsequent revisions to manuscript as required by journal	80%
	Overall
Primary author – Elizabeth Pritchard	80%

The following co-authors contributed to the work. Co-authors who are students at Monash University must also indicate the extent of their contribution in percentage terms:

Name	Nature of contribution	Extent of contribution (%) for student co-authors only
Ted Brown – secondary supervisor	Editing of draft of manuscript Intellectual input to the study	
Aislinn Lalor – colleague (PhD candidate)	Identification of included studies, Extraction of data from the included studies Feedback into on manuscript drafts	50% 50% 10%

Terry Haines – primary supervisor	Intellectual input to the study Editing of the draft of manuscript Third party arbitration for disagreements of included studies Guidance provided for data analyses Assistance with calculation/adjustment of risk ratios and effect size from raw data Cross checking of data analyses Guidance provided for subsequent revisions required by the journal	
---	---	--

Candidate's Signature		Date 15-05-2014
-----------------------	---	--------------------

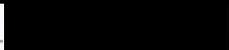
Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s) Alfred Health Research Unit - Kingston Centre

[Please note that the location(s) must be institutional in nature, and should be indicated here as a department, centre or institute, with specific campus identification where relevant.]

Signature 1		Date 15-2-14
Signature 2		12-3-14
Signature 3		

1.7.1 Abstract

Purpose: To investigate the impact of falls intervention programmes on participation of older adults returning home to live, following discharge from hospital.

Method: A systematic review of peer-reviewed articles and grey literature was completed. Limits were set for articles published in English, dated 1990-2012. Inclusion criteria included randomised control trials with older adults (≥ 65 years) that used an effective falls intervention and a participation measure, following discharge from hospital or emergency department. Two independent researchers assessed the studies for eligibility. Research risk of bias was evaluated using the PEDro scale (range 1-10). A meta-analysis of the selected articles was completed.

Results: Five studies fulfilled the inclusion criteria and measured participation outcomes short-term (< six months post-discharge, $n=488$) and long-term (6-12 months post-discharge, $n=571$). The results indicated that falls interventions provided a positive improvement in patients' participation level ($p = 0.042$, $p = 0.026$). However, the effect size was small at 0.20 and 0.21.

Conclusions: The meta-analysis findings indicate that there is a causal association between falls interventions and participation in daily occupations with older adults post-discharge. Although the effect size was small, practice implications of this study suggest that participation needs to be considered in future falls prevention research.

Key Words:

Fall; elderly; participation; activities of daily living; post discharge

1.7.2 Introduction

Health conditions and acute health events become more frequent with ageing, and may necessitate a stay in hospital (17). Recent publications have identified that older adults comprise 38% of hospital admissions in Australia (2011) (41), 37 % in the United Kingdom (2011) (42) and 33% in the United States (2007) (43).

Hospitalisation creates a *disruption* to everyday routines, roles, habits and abilities due to the confinement as people give up some of their individuality to assume the role of being a 'patient' (6, 7, 58). *Disruption* can be defined as a 'temporary or transient state of prolonged preclusion from engagement in *occupations*', referring to all daily activities including self-care, productivity (e.g. paid employment, volunteer work, household management) and leisure which also incorporates social participation (6, 68). If disruption is long-term, this can lead to negative health outcomes including cognitive or physical decline (13), and further hospitalisations (17, 69).

Falls are a significant consequence of hospitalisation for older adults (70), with the incidence of 4.52/1000 person days (71) in the six months following hospitalisation. Falls and disruption to everyday occupations (particularly through hospitalisation) are likely to be inter-related outcomes causing physical injury and/or psychological harm (e.g. fear of falling) (32, 72). These outcomes may inhibit participation in daily occupations at home and in the community and can lead to further physical and psychological decline, including functional mobility limitations or depression (73). This can contribute to de-conditioning, thereby increasing future risk of falls (17). Both of these negative outcomes have shared risk factors which are likely to co-exist, impacting reliance on services and overall health and wellbeing (59, 72).

Efforts to improve post-hospitalisation outcomes have tended to focus on one primary outcome at a time. For example Haines et al (74) investigated the effect of an exercise programme for the prevention of falls during the post-discharge period, while Lannin et al (75) investigated a home assessment prior to discharge. Previous systematic reviews have demonstrated effective interventions to prevent falls with older adults living in the community (67, 76). These include: group and home-based exercise programmes, Tai chi programmes, individualised home safety assessment, cataract surgery – first eye, and gradual withdrawal of psychotropic medications (67).

A systematic review and meta-analysis was carried out by Fairhall et al (59) of older community based adults, aged-care facilities or hospital settings to investigate whether exercise interventions (to prevent falls) had an effect on participation in life roles. It identified a small improvement in participation in life roles with specified falls interventions, with a larger effect shown when an exercise component was included. However, this review did not specifically focus on the post-discharge population. Given the shared risk factors of falls and participation in occupations contributing to causation, it is plausible that programmes designed to prevent falls may have the added benefit of promoting *occupational participation* and vice versa. Occupational participation is defined as being 'engaged in work, play or activities of daily living that are part of one's social-cultural context and that are desired and/or necessary to one's wellbeing' (68).

These concepts are important for service delivery, as a programme that addresses both participation and falls outcomes would be more valuable than interventions that only address one, all other things being equal. There is a need to investigate: i) whether interventions designed to prevent falls increase participation thereby minimising occupational disruption in the post-discharge population, ii) whether interventions designed to increase occupational participation in this population do increase participation outcomes, and iii) whether interventions designed to increase occupational participation minimise falls in the post-discharge older adult population. A systematic review and meta-analysis was conducted to investigate these three questions.

1.7.3 Method

A literature search was conducted in February 2012 using the following electronic databases: OVID Medline, AMED, PsychINFO, SCOPUS, CINAHL, EMBASE, Cochrane Library, and also manual search of the OT Seeker, OTDatabase, PEDro and REHABDATA (NARRIC). Peer reviewed articles and grey literature were examined through searching online. A comprehensive list of search terms was used including Medical Subject Headings (MeSH terms) where possible that included: aged, elderly, living at home, post-discharge, falls intervention, therapy with a number of functional and participation outcomes also explored. A full list of search terms is available in Appendix 1.5.

The following criteria were used to determine the eligibility of studies for inclusion in this review: i) interventions examined either an intervention designed to promote participation in occupations or an intervention previously demonstrated to reduce falls in this population, ii) the patient population were 65 years and over in the post-discharge period from hospital or emergency department visit, iii) the study used a randomised controlled trial design, and iv) the study reported an outcome of participation.

Intervention studies were excluded if they only examined falls outcomes and not participation outcomes as these studies have been examined in other reviews. Studies were included if; the intervention began in hospital and then followed through after discharge to home, if the intervention began following discharge, and if the hospitalisation was through admission to the emergency department.

Classification of interventions

The interventions used were classified into the following categories; i) exercise, ii) home modification, iii) psychotropic medication withdrawal, iv) Vitamin D supplementation, or v) multifactorial interventions. These classifications were based on a Cochrane Review of effective interventions for preventing falls of older adults living in the community (77). Participation interventions were classified as such if the primary intervention used was to increase participation in life situations within the home or community settings.

Participation definition

There are varying definitions encompassing the term participation. In this study, the term *participation* is referring to 'engagement in life situations' (48) and *occupation* refers to 'engagement and participation in a recognizable everyday life endeavour' (7). Integrating these two concepts leads to occupational participation where people engage in varied activities, roles and routines that are necessary for health and wellbeing (68). There are many possibilities of what daily occupations people may choose relating to how they participate in life situations and these may differ from person to person. This review examined a selection of possible occupations and assessed the study outcomes against these definitions.

Data extraction

Titles were initially reviewed by the primary researcher (EP) with any irrelevant articles or duplicates discarded. The remaining records were analysed through title and abstract by two independent researchers (EP, AL). Any disagreement of studies to include was settled through accessing the full article and discussion with any further conflicts resolved through arbitration of a third reviewer (TH). The flow of references identified through the review process is presented in a PRISMA flow diagram (78), as identified in Figure 1.10.

Risk of bias

A risk of bias assessment on the retained manuscripts was carried out using the PEDro scale (79). This process was used to systematically identify contributing factors related to study design and reporting that may have biased the results. The PEDro scale identifies factors of the allocation methods, blinding, concealment and other specific areas of bias. However, it is only possible to estimate what extent the bias has impacted the results, and not to determine the true extent of bias (80).

Data synthesis and meta-analysis

The following details were extracted from the reviewed articles by two independent researchers: specific falls intervention carried out, the participation tool used and scores, age group, discharge environment of participants, sample size and specific point of time for follow-up measurements if available. If data were missing, the identified author was contacted in their current workplace via email on two occasions, requesting further data. If no response was received, then the study was excluded due to insufficient data.

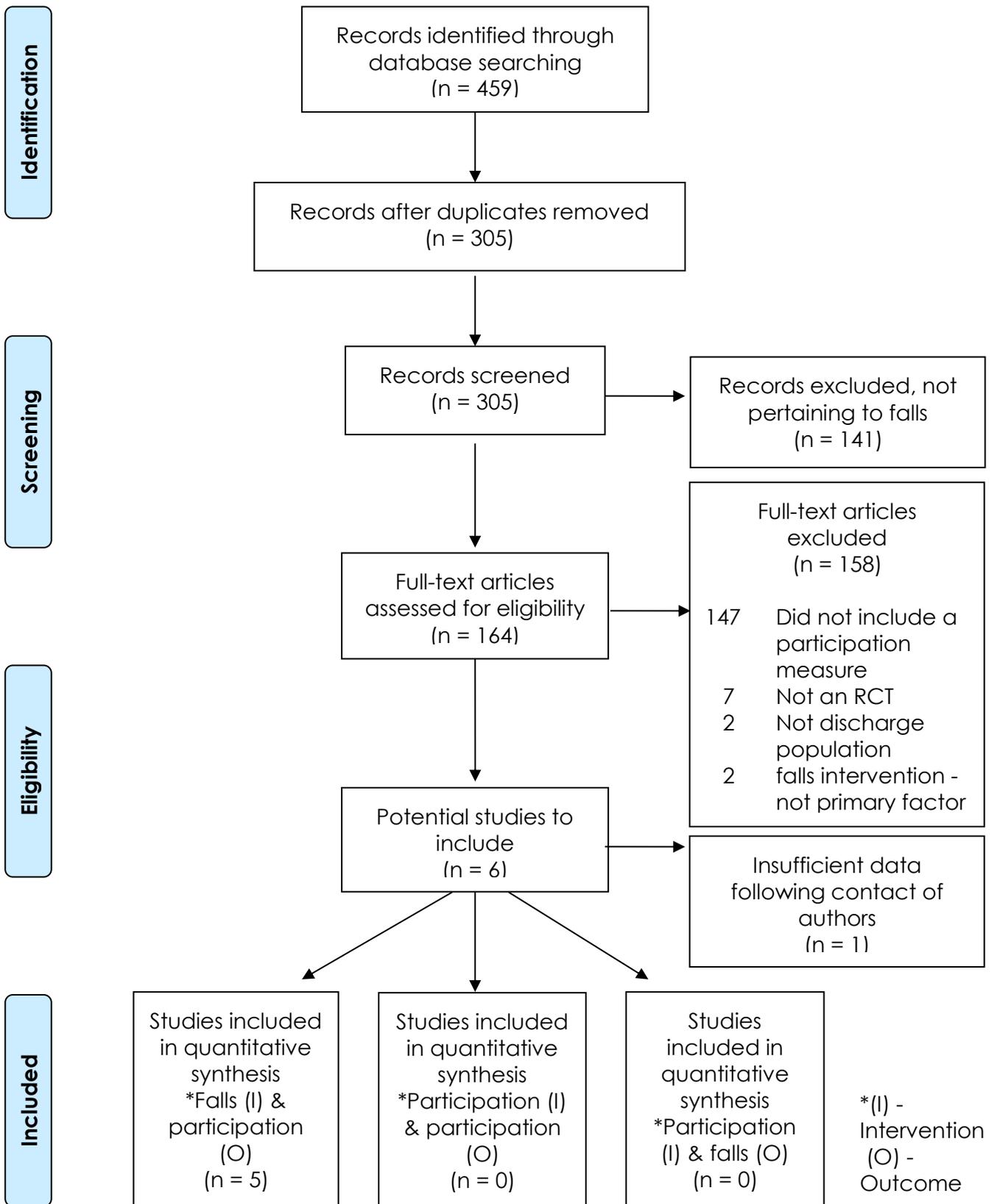


Figure 1.10: Flow diagram of selection process of articles for falls interventions impact on participation post-discharge.

Extrapolation of the mean, upper and lower confidence intervals and standard deviation were used in the meta-analysis. This meta-analysis is based on a random effects analysis approach, as the treatment effects differ from each other. This approach takes into account the possibility of both sampling error and underlying variance of the population, contributing to the source of the variance of effect size (81). The pooled standardised deviation was estimated using standardised difference and standardised error calculations. This calculation was completed so that future research outcomes could be compared more easily using the standardised units presented. A meta-analysis was then carried out with this continuous data.

1.7.4 Results

The initial search yielded 459 records which were reduced to 164 records after deletions. Within the remaining 164 studies, following a more detailed review it was determined that 19 of the studies measured participation using a range of measurement tools. However, 13 of these studies did not meet one or more of the inclusion criteria, and reduced the eligible studies to six. No studies using participation as a primary intervention were identified.

Of the six remaining studies, three records did not report sufficient data required to complete this type of calculation and the authors were contacted. Two of the three authors supplied the additional data (82, 83). One did not respond and the corresponding study was discarded from the meta-analysis (84). Two studies reported the same cohort for both papers over two different time periods, and only one was included in each analysis (82, 85) as seen in study demographics and intervention characteristics presented in Table 1.1. Three studies measured outcomes at differing timeframes, leading to the meta-analysis being divided into two timelines of participation measurement: *short-term* (less than six months from discharge, n=3) and *long-term* (6-12 months from discharge, n=4). The pooled sample sizes following randomisation for short-term were n=488, and long-term n=571. Overall, seven participation measures were identified within the reviewed studies but of the eligible studies, only the Frenchay Activities Index (FAI) was used indicating a strength for the analysis as additional sources of variation did not need to be considered (63). This scale incorporates a time-use method of viewing participation, to collect frequency and duration of participation in varying activities. The FAI is comprised of 15 items and identifies a selection of activities

carried out in both home and community settings including; indoor/outdoor domestic activities, social activities and 'gainful work'. The scale ranges from 0-45 with higher scores indicating greater participation. This scale uses the timeframes 'never'/'none' to 'weekly' including hours of work and has documented good construct validity (63).

Assessment of risk of bias identified differences across studies in several areas.

Total scores of the studies ranged from 5/10 to 8/10 indicating different degrees of adherence to items and possible bias in each study. Blinding of participants or therapists was not carried out in any of the five RCTs, while four had baseline comparability, concealment of allocation and intention to treat analyses (83). Outcomes of this analysis are presented in Table 1.2. Although it is important to note these areas of non-adherence and potential bias, this did not require any of these studies to be excluded from analyses.

Table 1.1: Study demographics and intervention characteristics identified

Authors/ year	Participants at randomisa- tion	Age - mean	Location	Country	Interventions	Professionals involved	Diagnosis / Ward	Exercise	Home safety/ modifications	Vitamin D	Medicat- ion reduction	Multifactor- ial approach	Participat- ion measure
Haines et al (2009) two & six month follow-up	n=53	80.7	Hospital to home	Australia	Exercise- balance and strengthening	Physiotherapi- sts	Geriatric, medical or surgical	Yes	No	No	No	No	FAI*
Hendriks et al (2008) four & 12 month follow-up	n=333	74.9	Emergency Dept.	Netherlands	Assessments with education	Doctors and occupational therapists	Following a fall	No	Yes	No	No	Yes [†]	FAI
Von Koch et al (2001)	n=83	72	Hospital to home	Sweden	Rehabilitation at home	Occupational, physio and speech/ language therapists	Following a stroke	Yes	No	No	No	Yes [‡]	FAI
Ziden et al (2008) six/ 12 month follow-up	n=102 [§]	81.9	Hospital to home	Sweden	Supported discharge and rehabilitation	Occupational and physio therapists	Following a hip fracture	Yes	No	No	No	Yes	FAI
Ziden et al (2010)	n=102 [§]	81.9	Hospital to home	Sweden	Supported discharge and rehabilitation	Occupational and physio therapists	Following a hip fracture	Yes	No	No	No	Yes	FAI

* Frenchay Activities Index. †Included full medical assessment incorporating review of vision and medications, although interventions were not discussed.

‡ Included interventions from an occupational therapist also but did not state safety assessment was carried out although this is common practice in home assessment.

§ Only one of these studies used in each timeframe meta-analysis as the same cohort is used.

|| Therapy by an occupational therapist also discussed although specific home safety assessment not stated.

Table 1.2: Outcomes of PEDro analysis of bias

Authors/year	Eligibility specified	Random allocation	Concealed allocation	Baseline comparability	Blind subjects	Blind therapists	Blind assessors	Adequate follow-up	Intention to treat	Between group comparisons	Overall score *
Haines et al (2009)	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	8
Hendriks et al (2008)	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	7
Von Koch et al (2001)	Yes	Yes	No	No	No	No	Yes	Yes	No	Yes	5
Ziden et al (2008)	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	7
Ziden et al (2010)	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	7

* Scale is 0 – 10 with 10 showing the most adherence to items

Meta-analysis results

Only one study individually identified a beneficial effect of a falls intervention on participation following meta-analysis (85). However, when the studies were pooled within the two separate measurement timeframes, the overall positive effect identified was significant. This demonstrated that participation was increased with falls prevention interventions for the post-discharge population as seen in Figures 1.11a and 1.11b. However, it is important to note that the effect size in each analysis was small [pooled standardised effect: *short-term* 0.20, 95% CI 0.01 to 0.39 ($p = 0.042$); *long-term* 0.21, 95% CI 0.03 to 0.39 ($p = 0.026$)]. There was low to moderate heterogeneity when pooling these data with $I^2 = 40.3\%$ for short-term, and 0% for long-term. The Cochran's chi squared statistic in each case for heterogeneity was not significant ($p = 0.187$ and $p = 0.789$, respectively).

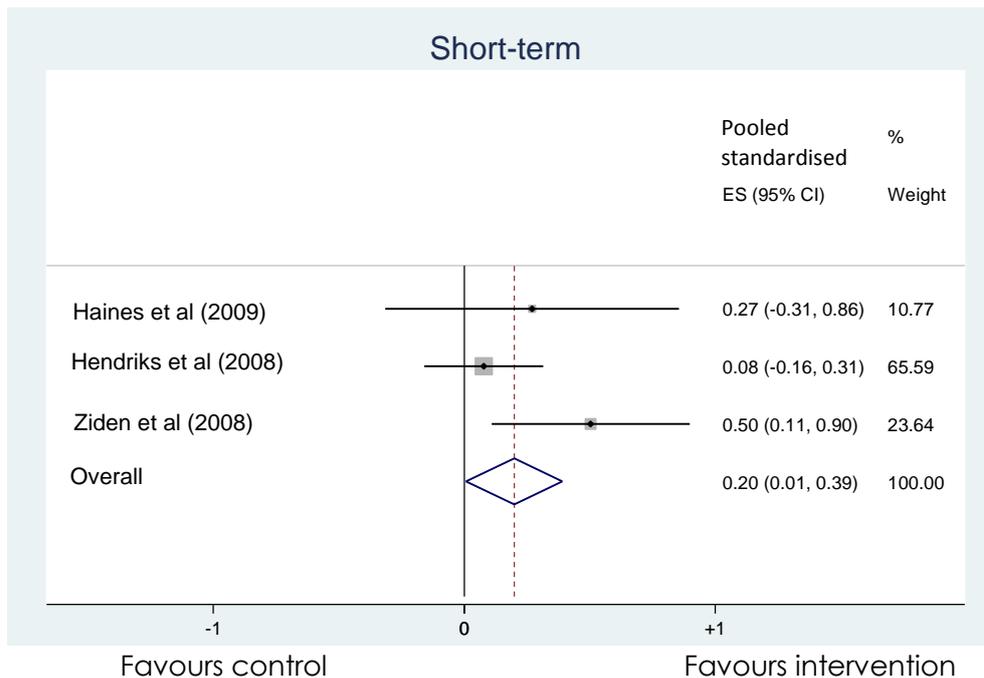


Figure 1.11 a) Less than six months post-discharge

($I^2 = 40.3\%$, $p = 0.187$ - heterogeneity)

Comparison: Falls intervention versus control

Outcome: Impact on participation

Note: Weights are from random effects analysis

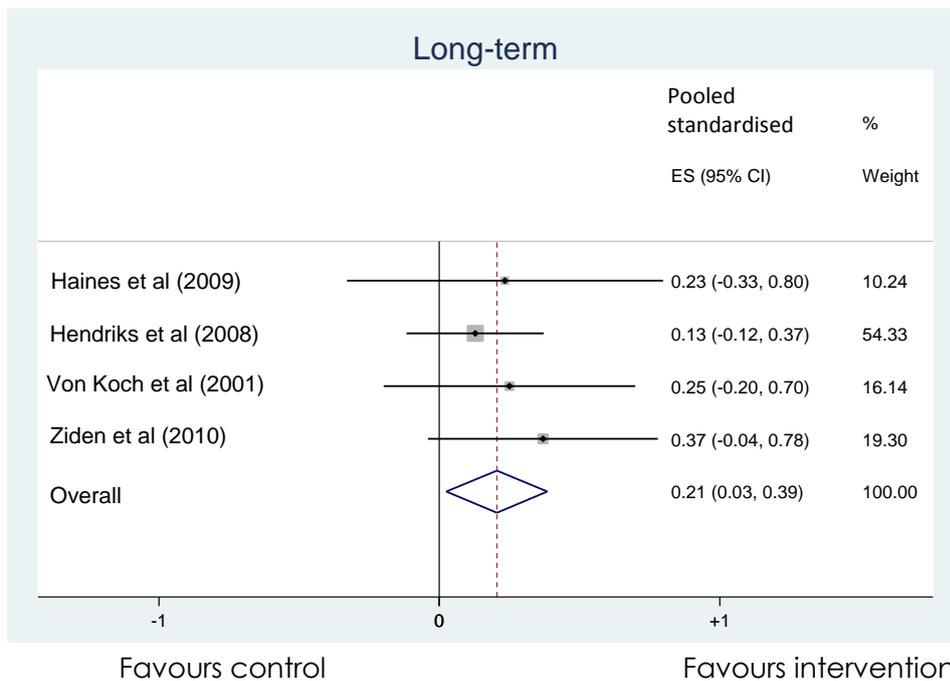


Figure 1.11 b) Six months or more post-discharge

(I-squared = 0.0%, $p=0.789$ - heterogeneity)

Comparison: Falls intervention versus control

Outcome: Impact on participation

Note: Weights are from random effects analysis

1.7.5 Discussion

This review attempted to identify studies relating to three questions around prevention of falls and promoting participation in the post-discharge older population. Due to the paucity of current research, enhancing participation does not appear as a primary intervention and few studies incorporate participation measures in falls interventions with this population. Hence, there were only five studies that could be used in this meta-analysis and only one question could be addressed. The small number of studies able to be analysed has an impact on the lack of generalisability of the findings, although they do show that there is a correlation between falls interventions and level of participation. There is evidence that integrating exercise in everyday life activities has an impact on participation levels and decreased falls in the community dwelling populations (86). However, it is not yet known whether direct facilitation of participation in daily occupations with older adults post-discharge will lead to greater benefits for both falls prevention and participation enhancement.

Geographical and contextual locations of the studies varied across three countries. Participants were recruited from hospital or immediately following admission /discharge from an emergency department. The health systems in each of the countries varies from a highly regulated private insurer health system (the Netherlands) (87), to state policy with regional funding distributed through local county councils and municipalities (Sweden) (88), to a mixture of national/state funded public services with private health care options (Australia) (89).

The similarities within these studies are that a significant health event caused a disruption in occupations to some degree, which then necessitated contact with a health-care system. Across the studies this included stroke, a fall (either injurious or significant enough to warrant a visit to the emergency department) or an illness requiring health service input through the hospital, refer to Table 1.1. The stroke study (83) included collection of self-reported falls data and provided an individualised rehabilitation programme including exercise, which related to the overall eligibility for meta-analysis.

The types of falls prevention strategies carried out differ in each of the studies with all except one including an exercise component (90) and none promoting participation as the intervention. The interventions included: a programme of six types of exercise at six levels of difficulty with the novel delivery mode of a DVD (91); supported early discharge with continued rehabilitation at home through a multidisciplinary approach from an occupational therapist, physiotherapist and speech language therapist (83); rehabilitation in daily activities and physical function in the home compared with conventional care (82, 85). Hendriks et al (2008) did not include exercise as part of the intervention in their study but carried out a full medical assessment including medication /vision review and occupational therapy assessment. The occupational therapy component included a home based safety assessment with education and basic modifications as required. Although these interventions differ, they all included components of effective falls prevention strategies.

Similarities between these studies included; the age range of older people recruited post-discharge, the randomisation of allocation to the experimental and

control groups, between group comparisons identified, and point estimate and variability identified and discussed.

Falls prevention interventions provided to older adults returning home post-hospitalisation appear to have the added benefit of enhancing participation in occupational activities. This was also apparent even when embedded in a stroke rehabilitation programme. However, the magnitude of impact (effect size) of participation enhancement was small.

Efficacious falls prevention interventions have been shown to reduce the rate of falls in the post-discharge population (67, 76). However, longitudinal studies have shown that adherence to falls prevention strategies is poor long-term (92, 93). Factors previously found to contribute to poor adherence to exercise-based falls prevention interventions include exercise being foreign, painful or tiring, not enjoyable, or the person lacks motivation to continue with the programme (92). Low levels of adherence to exercise programmes have been documented over several falls prevention trials and are likely to be even poorer when carried over into 'real life' contexts outside of research (93).

Long-term adherence to falls prevention activities is vital for maintaining longer term benefits. A previous 12 week trial of an exercise intervention with older adults comparing weight bearing, seated resisted exercises and social visits (n=180) demonstrated that the benefits in balance and falls risk were partially or totally lost after only 12 weeks of cessation of the programme (94). If adherence to falls prevention interventions is unlikely with older adults in the longer term, then there is need to consider falls prevention and participation promotion from a different perspective. This could include strategies being linked to everyday occupations that hold meaning and importance to the older adult, thereby increasing motivation for continuance as well as provide physiological benefits similar to incidental exercise.

A recent randomised parallel trial was carried out in Sydney, Australia (86). This three armed study investigated a lifestyle intervention approach on falls in older people living in the community and also measured participation. Interventions ranged from 1) balance and strength training integrated into everyday activities known as the 'LiFE' programme (n=107), 2) a structured exercise programme three times per week (n=105), and 3) a gentle exercise programme (n=105) with six and

12 month follow-up. The results measured limitation as well as frequency of participation across personal, social and community (95). Following a pairwise comparison, the intervention was successful with the effect size reported as 0.49 ($p=0.003$), and structured versus control reported as 0.17 ($p=0.28$). This indicates that integrating exercise into everyday life routines may be a way to increase participation at the same time as addressing falls in older people in the community.

By promoting participation in occupations that are of value to the individual and that take place in his or her everyday environments, people are more likely to be motivated to perform them long-term with positive results on participation (7, 86). An example of this is if grocery shopping is familiar and meaningful to an older person, then they are more likely to be motivated to return to this occupation than begin a new activity such as a home exercise programme. Likewise with outdoor recreational activities, individuals may be more motivated to be supported to return to these rather than carry out a prescribed exercise programme. This may be the key principle to promote the ongoing uptake of participation-based falls interventions with older adults following discharge (86, 96). However, limitations may exist for funding of these types of interventions, which do occur in some occupational therapy community rehabilitation programmes but may not be available for all older clients.

Study settings and interventions

Several features of the studies for inclusion in this meta-analysis require consideration as they may have impacted on the type of clients that participated in the studies. The people who volunteer to participate in studies involving exercise are likely to be positively predisposed towards exercise compared with the general patient population. Those accessing privately funded services may have higher expectations of access to treatment possibilities (97). Payer source, whether it is through private or public funding, may influence differing levels of adherence to strategies although this is not yet shown in this population (98). These factors may have influenced the type of participants recruited for the studies and the involvement expectations they may have had. However, the homogenous results presented, may indicate that the mechanism by which the

interventions promote participation, may be close to being completely mediated via the prevention of falls rather than due to the other influences identified.

Study limitations

A key limitation in this review was the small number of studies that identified participation as an outcome to measure. The initial review resulted in 19/164 studies that included a participation measure with only six meeting all the inclusion criteria and five reporting sufficient data for analysis. The definition of participation varied and was discussed in different ways throughout the studies even though the same measure was used. All studies included at least one evidenced-based falls prevention strategy, although these were also diverse across the studies. There were insufficient studies to meaningfully conduct further meta-regression analysis to identify which specific intervention(s) may have had a stronger impact on participation.

Other limitations include the different context of the sample populations (patients from within a specific unit or emergency department and different countries), also varying stages of health. There were variances in the interventions carried out where four studies included exercise intervention, and one did not (90).

Few studies have measured participation outcomes in falls interventions in the post-discharge older adult population and therefore the overall number for meta-analysis was only five, with a total of 571 participants. Although these studies have examined the impact of falls interventions on participation across varied diagnostic groups of older adults, this was more as a secondary outcome measure than a primary one.

Recommendations for rehabilitation

Findings of this study were significant (with small effect size), that intervention to reduce falls increased participation in occupations and therefore has an implication for practice. It would be advisable for health professionals to focus on falls prevention programmes within their rehabilitation interventions for older adults, to promote participation in occupations until further more conclusive research is completed.

Recommendations for future research

This meta-analysis has highlighted potential directions for future research. Falls prevention studies need to include measurement of participation as one of the primary outcomes in order to provide further evidence of the impact on participation. Future research could include studies that incorporate participation based interventions, which is currently not routine practice. Investigating which participation scales are more valid in determining both physical and psychological participation in daily life following a stay in hospital is warranted. By including all or some of these considerations in future research, these components may increase individual adherence to programmes and positively impact longer-term outcomes, thereby contributing to overall health and wellbeing following hospitalisation.

1.7.6 Conclusion

When investigating the causal association of falls intervention on the participation of older adults following discharge from hospital or emergency department to home, this meta-analysis indicated a positive effect. The evidence suggests that falls intervention services provided to this participant group leads to a greater increase in participation in daily occupations compared to the control conditions. However, it is important to note that the effect size was small (0.20, 0.21) although significant ($p = 0.042$, $p = 0.026$). As no studies were identified in the systematic review that used strategies to primarily promote participation in occupations in this population, only one of the three review questions was able to be addressed. This indicates the need for ongoing research to identify if participation interventions do indeed increase participation, and if participation interventions positively impact falls with the older adults after they are discharged home from hospital.

The implications of this meta-analysis are to assist in determining potential cost implications of falls prevention programmes. It may be possible to provide more cost effective health interventions by designing programmes that concurrently address both participation issues and falls prevention initiatives. This could potentially reduce negative health outcomes and service demand by positively impacting health and wellbeing through addressing participation in daily occupations.

1.8 Summary of chapter one

This chapter contextualises the background to this thesis by presenting the ongoing health challenges for the ageing population; exploring and defining the term participation; introducing two conceptual models on which this work is based; and documenting the first study that investigated falls interventions with older adults and the impact of these on participation.

There are additional research questions that arose from following the systematic review. These include; how studies in falls prevention could include a primary measure of participation, and what are the appropriate valid measures of participation to use following hospitalisation? However, these were unable to be considered within this thesis due to limitations of resources and the chosen focus for the remainder of the studies within this project. The decision to focus on increasing understanding of *why* older adults participate in activities/occupations, and what were the enablers and barriers for this type of participation was made as this was clearly not an area that had yet been investigated fully. It was determined that these initial steps needed to be clarified before the previous questions could be explored.

2 Volition and participation

2.1 Précis

The previous chapter presented study 1 (a systematic review) that focussed on the impact of falls interventions, or interventions designed to improve participation amongst older adults following discharge from hospital or emergency department. The systematic review identified that participation rates can change in response to exposure to a range of falls prevention interventions, however the results did not tell us why. In undertaking this thesis a decision was made at this point to direct the investigations more broadly, to gain better understanding of why older adults participate in activities/occupations. This chapter will explore these reasons whilst paying particular attention to the concept of volition and the established theoretical models that have explored this concept. It also presents a brief review of literature to understand the association between volition and occupational participation.

2.2 The importance of volition for participation

2.2.1 What is volition

Volition is described as the thinking process that translates intention (motivation) into action (4). It has been posited as an essential component (99) of achieving participation in activities for individuals. However, volition has not been widely investigated amongst older adults (7, 99). Volition is recognised as a complex internal response of intentional action within the brain (7). It is related to social psychology (incorporating behaviours, interpretations of experiences and social influences) as well as functional neuro-anatomy (organisation of the neural system) (100). Three components of volition are described as being essential to support these thinking processes of completing activities or occupations (7). These are; *personal causation, values, and interests* (Figure 2.1). These components have been asserted as contributing to the interpretation of life experiences in which an individual creates their “role” within the world they live which then leads to participation (7).

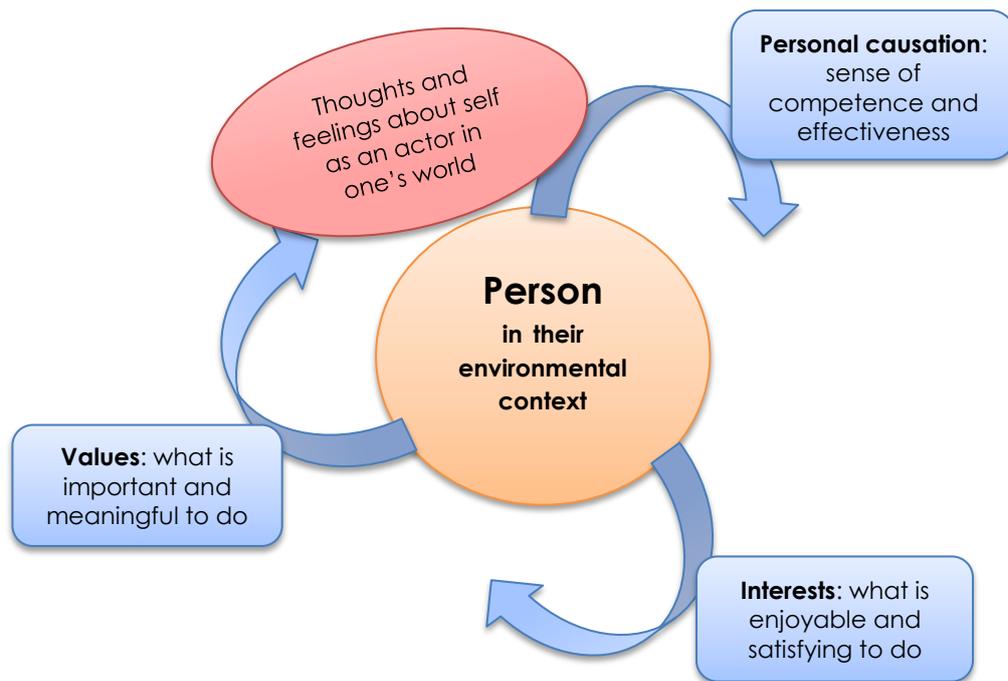


Figure 2.1: The components of volition leading to interpretation of thoughts and feelings

(adapted from The Model of Human Occupation: Kielhofner, 2008 p.13)

The first component of volition (*personal causation*) (7) pertains to the degree of self-understanding or knowing that one has the ability to achieve the desired action/activity (7). Personal causation is not a commonly used term in health literature but has been recognised as comparable to *competence* (101). This is defined within the theory of self-determination (101) as when a person believes they have the degree of ability or skill required to achieve a specific activity. Other theorists have identified this component of volition as *self-efficacy* (102) and described as the belief that one has in oneself to reach personal goals (103). These three psychologically based models or theories contain a commonality. That is, individuals have a psychological need to believe that they are capable of achieving a desired activity in order to complete it (99). Personal causation contributes to the thinking process to elicit action by supporting the internal thought processes and is proposed as a vital driver of *intention* into action (participation) (4).

Previous research has identified that individuals are less likely to attempt, or succeed in, an action or activity if personal causation (self-belief) is not present (7, 104). This has implications for health professionals when working towards optimal health outcomes with clients in rehabilitation programmes. There is a probable

need for clinicians to consider how to develop effective strategies that enhance personal causation (or self-efficacy) within clients, which could potentially lead to supporting adherence to recommended interventions in rehabilitation programmes (72). Individuals who believe they can achieve activities are more likely to accomplish participation and have improved health outcomes (105).

The second component identified in the theory of volition is *values*, or meaning, of the activity to the individual (7). Activities need to align with the personal values, belief system, convictions and sense of obligation of the individual for participation to occur (10, 51). A recent study of 154 community-dwelling older adults in Los Angeles investigated meaningful activity participation and wellbeing. The study reported that individuals with higher levels of participation in meaningful activities, had better psychological wellbeing ($p < .01$), as well as higher quality of life ($p < .01$) (106). This has also been supported by previous studies where the importance of meaning in activities was associated with higher levels of life satisfaction with younger and middle aged adults (107, 108). Additionally, engagement in activities that matched personally held values and contained meaning for the older adults (60 – 91 years, $n=292$) were associated with successful ageing ($p=.01$) (39). Engaging in meaningful activities has also been identified as a determinant of wellbeing (99, 106, 109).

The final component of volition that has been proposed is *interests* (7). Having an interest in performing a specific activity is likely to lead to personal enjoyment and satisfaction (7). The interest may be intrinsically driven (decision from within own self) or extrinsically driven (to please someone else or seek a reward) (7). A previous study of adults with obesity in Canada identified that having an (intrinsic) interest in the activity was one of the determinants for effective action (92). In contrast, a lack of interest was reported as a barrier to engaging in positive health activities (92). However, the participants in that study were aged 25-65 years. This exemplifies that volition has not been extensively researched amongst older adults. However these principles are likely to be generalisable to the older population.

2.2.2 How does volition differ from motivation?

Volition is not a commonly used health term across disciplines or research when investigating activity or rehabilitation programmes. However, one concept that is

similar is *motivation*. Motivation is a term that has varied interpretations and has been defined as “a hypothetical construct describing the inner and/or outer forces responsible for the triggering, guiding, intensity, and sustaining of behaviors” (4). It can incorporate an inner drive (known as intention) to behave or act in a certain way that may incorporate wishes, desires and goals in an effort to activate action. Previous health researchers have identified motivation as a key component for client participation in programmes (99). This has been accompanied with the acknowledgement that a lack of motivation can lead to suboptimal levels of functioning (99, 110). However, it has been suggested that motivation alone does not necessarily compel intention into action (7, 111).

A discrepancy can exist between the personal belief that an individual has high levels of intention (motivation) to perform a task or activity yet they do not carry out, or achieve the intended activity (4, 99). Shifting from intention to completion of an action has been posited as requiring an additional component (4, 111). This is described as *volition* or the next level of thinking, planning, problem solving and initiation that needs to occur to moves beyond motivation and successfully achieve action (participation) (111) (Figure 2.2).

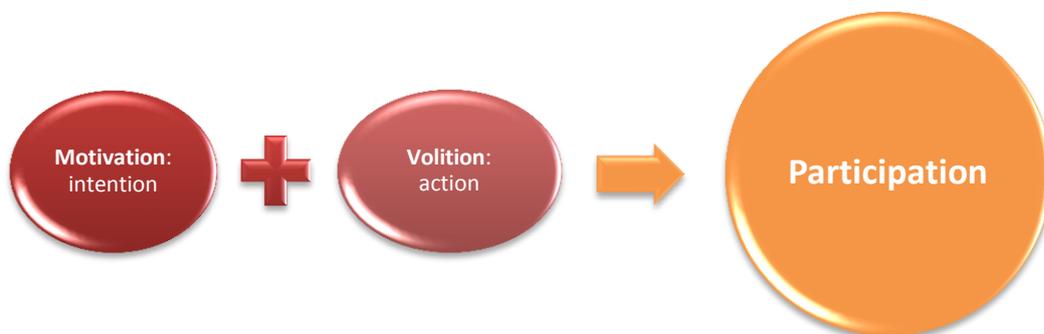


Figure 2.2: Proposed motivation and volition process of participation.

Volition has been argued as an influencing factor of participation in activities for older adults. An example of how the components (personal causation, values and interests) work together and how volition differs from motivation is presented below.

An individual states their desire to leave their current job to find part-time employment as they are nearing retirement and unhappy with remaining in the current demanding workplace environment. However one year later they remain in the same role and have not investigated any possibilities or applied for any alternative roles. This could exemplify a lack of what is commonly called *motivation* or the *intention* to complete an action. They have still not achieved the task even though the person may strongly believe they have high levels of motivation or intention to change roles. They may possess the ability to make and achieve a plan for the desired change. However they may not be able to overcome the current challenges (e.g. a health limitation, lack of interest, fear of the unknown, or a challenging environment). They may lack the self-belief that they can actually achieve a different work role (personal causation); be unsure of what possible job opportunities could align with their beliefs regarding meaningful types of roles (values); or determine which roles could match their area of passion (interests). The activity of "finding another job" would remain uncompleted as the three volition components were not able to be fulfilled.

2.2.3 The Model of Human Occupation (MOHO)

Personal causation, values, and interests have been presented as three core volition components within the Model of Human Occupation (MOHO) (7). Volition is described within this model as the "impetus towards action" (51) and is a unique feature of the MOHO (7). The MOHO centres on the processes of how humans adapt to being able to perform occupations that become habits and roles within their lives (7). It considers "environmental impact, volition, habituation (patterns, habits and roles), performance capacity, participation, skills, occupational identity and occupational competence". These have been stated as leading to *occupational adaptation* (7) (Figure 1.7 in section 1.3.4). Adaptation is concerned with how people adapt their choices of, and *undertake* their occupations through selecting, organising and interpreting their personal experiences and development of identity (roles) and competence (abilities) (51) (e.g. a transition from paid employment to meaningful engagement in leisure or community activities).

The MOHO presents a theoretical approach to understand **why** people do things, **what** influences choice of activities and **how** they change and adapt areas of their lives to achieve participation. This biopsychosocial model explains how a person engages in occupations through internal concepts of volition, habituation (roles and habits that are formed during life), and performance capacity (physical and mental abilities). These components lead to participation, performance, and skill advancement. Facilitation of these self-regulatory strategies has been associated amongst older adults with increased physical performance (112), improved adherence to health programmes (113) and resulted in a positive impact on overall levels of participation (114).

The basic assumptions of the MOHO include that humans are a dynamic system where elements work together to produce behaviour which is responsive to, and dependent on the context (7). It assumes that behaviour changes continuously to meet these opportunities and demands. The model espouses that people are shaped by occupations and everyday doing (of activities) where occupations are the result of motivation (intention), patterns of behaviour, performance capacity and influenced by the environment. People are able to reshape their abilities and identities through adaptation or interpretation of life experiences (7, 115). This is encapsulated in the term volition which is seen as a vital concept to explore in relation to understanding these choices and opportunities for participation.

One population group for which consideration of volition may be important is older adults who have recently had a period of hospitalisation for a significant health event whereby they may have experienced a temporary loss of ability to perform valued activities. These people often undergo a rehabilitative process aimed at restoring them to their previous levels of participation. Limited research has been published exploring the concept of volition amongst older adults post-discharge to examine how this supports or inhibits participation and health outcomes (115, 116). Previous research has demonstrated positive associations between participation and wellbeing in older adults and between volition and life satisfaction in older adults (117). An example of this was a study investigating the determinants of wellbeing that reported an association between volition and wellbeing in younger university students (118) (not amongst older adults). A final quantitative study of 292 community-dwelling older adults (60 – 91 years) in the

United States investigated the correlation between long-standing occupations (that were meaningful to the individual) and successful ageing. The study identified that being engaged in long-standing occupations was associated with life satisfaction ($r = 0.25$; $p = 0.01$) (39). The occupations examined in this study held a high degree of meaning for the individual and provides evidence towards understanding the link between volition and participation.

Two qualitative studies have been published investigating the association between volition and participation in occupations amongst older adults. A phenomenological study explored the experiences of eight participants living in a residential facility with dementia and how volition impacted upon their occupational choices (119). The study reported three themes that explained how volition was experienced 1) variation in the expression of volition for engagement in occupations, 2) participants redefined what was meaningful to them due to limitation they now had, and 3) interactions between volition, meaningful occupations, and social environment, impacted on the behaviours they exhibited (119). The remaining qualitative study described two personal narratives to understand how volition impacted on their sense of control and choice of activities explored (120). Although these studies shed some light on the relationship between volition, participation and health outcomes, little is known about these relationships amongst older adults living in the community or those who have been discharged from hospital.

2.2.4 Summary of volition

This section has provided a definition of volition; explained how the concepts of personal causation, values, and interests combine into the broader construct of volition; articulated differences between the concepts of motivation and volition; and summarised the available evidence reporting associations between volition and participation activities on health outcomes. It has also highlighted the lack of research into volition and participation amongst older adults which indicates the need for further investigation.

2.3 Measuring volition

To investigate volition and participation with the older population, a measure was required. This would enable clinicians to identify the level of volition an individual has, in order to be able to select activities within their rehabilitation programmes that contain higher levels of personal meaning. This in turn is likely to increase the adherence to continuation of recommended programmes or activities, and thereby positively impact health and wellbeing.

A limited range of five volition scales were identified following a review of the published health science literature. Key words included; volition, motivation, measurement, older adults, participation, and daily activities. The method of data collection planned for the ensuing cross-sectional studies within this thesis was through telephone interviews. Therefore the scale selected needed to be administrable during a one-off contact by phone. The literature review used the Scopus database and Google Scholar to identify appropriate instruments that could be utilised with older adults in a short one-off telephone interview. These scales are presented and discussed with a summary identified in Table 2.1.

The first scale is the *Volitional Questionnaire* (VQ) (121) that has been used in occupational therapy to assess volition through systematic observation (by the therapist) of a person's behaviour and how they react within the environment (110). The VQ is useful when a person cannot self-identify their level of volition (e.g. if they have dementia) and can lead to identifying relevant occupations to explore with the individual. However the findings are influenced by therapists' interpretation and the requirement for direct observation may prove time consuming. High inter-rater reliability of the VQ was identified in a United States study with intraclass correlation co-efficients between 0.75 and 0.9 across 30 experienced therapists (p values not reported) (110). All but one item met the requirements for unidimensionality following Rasch analysis, indicating that the items were a valid measure of the volition construct (110). The VQ has been used in the field of adult mental health 18 – 65 years (122), adults with intellectual impairment (123), and also developed for paediatrics (124), therefore not immediately generalisable to older adults.

Table 2.1: Overview of volition scales identified following a scan of literature

Scale	Administration method	Strengths	Limitations
Volitional Questionnaire	Observation	Occupation based Client-centred Easy to score Can introduce occupations (new to the client) from the scoring	Mainly used with young adults, paediatrics and people with intellectual impairment
Assessment of Occupational Functioning	Collects vocational history, narrative responses	Information gathered from the client's view A screening tool	Time component (30 mins)
Model of Human Occupation Screening Tool	Observation, interviews, case notes and proxy notes	Flexible across settings and client groups Easy to use	Extensive data collection, better suited in clinical settings, validated with younger adults
Volitional Component Questionnaire	Face to face	Measures two modes of volition Comprehensive scale Identifies predictability of behaviours	Length (190 or 36 items), mainly used with athletes or those with psychiatric disorders
Occupational Questionnaire	Pre session requirement with face to face discussion	Short screening tool Easy to use	Requires at least two person contacts, requires pre-session work by the individual, varied Likert scale responses

The second instrument is the Assessment of Occupational Functioning (AOF) scale. The AOF identifies the three constructs of volition (personal causation, values and interests) along with identifying the individual's roles, habits and skills by either the therapist or the individual from their perspective (with therapist follow-up). This scale collects a vocational history of the participant and takes around 30 minutes to administer the gathering of mainly narrative responses (125). The AOF requires interpretation by the therapist (of the participant's answers) and to describe the person's level of volition and what occupations they are interested in pursuing. This scale has undergone examination of content validity (126) and been used with young adults (127), and adults who are alcoholics (128). Test-retest (three diagnostic groups) and inter-rater reliability were identified as being above minimum acceptable levels (coefficients .70 to .90, $p < .01$; .78, $p < .01$) with community and institutionalised older adults (125). A limitation of this scale is the time required to administer this assessment can preclude it from various settings.

The third instrument is the Model of Human Occupation Screening Tool (MOHOST) (129) which is a comprehensive scale to capture information that is both occupation and volition focused across client groups and settings. This scale provides an understanding of the client to guide development of the client-centred treatment plan. Information can be gathered through observation, interviews, case notes or proxy reports (7). This MOHOST has been used with adults 18 – 65 years of age (n=163) and shown to have internal content validity as well as clinical utility when used by therapists in the United Kingdom and the United States (130). Reliability and validity of the scale was investigated and reported as (*infit*: mean 1.0, [SD 0.4], STD -0.2, [1.4], reliability indices of 0.93) (130) with only two out of the 24 items misfit. This indicates the tool was valid and measured the construct intended (*infit* MnSq: 0.7 to 1.6; ZStd -3 to 5), with a standard error ranging from 0.12 to 0.14. Data collection for this assessment is more suited to the clinical environment where observation can be used and therefore has limited applicability.

The fourth instrument is the Volitional Component Questionnaire (VCQ) (131) which is commonly used in psychology to measure volition. It is a detailed 190 item scale that calculates differences in self-regulatory abilities and is able to predict behaviour. A shortened 36-item version is also available and has been used amongst people with psychiatric disorders and in Human Kinetics in relation to athlete recovery following injury (132, 133). A cross-sectional study investigated depression in people with multiple sclerosis (134), using the VCQ. It examined the association of volitional modes of coping where maladaptive volitional behaviours were elicited through demanding or stressful situations. Internal consistency of the scale was reported as 0.62 to 0.90 (Cronbach's alpha) (134). The presence of adequate volitional components have been previously reported to assist with recovery of stress when people are action oriented ($r = -.32, p < .001$) (135). These studies have professed the importance of volition in order to promote participation. However the VCQ is time intensive due to the number of items and has been applied more with psychiatric and sporting contexts (young adults) rather than the older adult population.

The final instrument identified was the Occupational Questionnaire (OQ) screening scale (117), originally developed from the MOHO to measure occupation by focussing on the "volition subsystems and activity patterns" from

the participant's view (7, 117). An example of this is shopping (activity) may be described by the individual as either recreation or work (occupation), depending on their personal interpretation. The OQ incorporates the three volition constructs in a short four-question scale to be administered in discussion with the individual, after specific activities are logged within a daily schedule in half hourly increments. The original questions state:

- 1) "I consider this activity to be: work, daily living work, recreation, rest,
- 2) I think I do this: very well, well, about average, poorly, very poorly,
- 3) For me this activity is: extremely important, important, take it or leave it, rather not do it, total waste of time,
- 4) How much do you enjoy this activity: like it very much, like it, neither like it nor dislike it, dislike it, strongly dislike it" (117) (Appendix 2.1).

The initial development of the OQ was reported in a descriptive study designed to examine the relationships between the subsystems of volition (personal causation, values and interest), patterns of activity, and life satisfaction of older adults (117). Results reported a positive correlation between higher life satisfaction and higher levels of engagement in work/ recreation activities, but not with daily living activities or rest (117). Minimal reliability or validity studies have been published amongst older adults however; Smith et al (117) identified 77-81% agreement for the volitional items over two studies (two weeks apart) indicating a reasonable level of test-retest reliability. The OQ has been used in studies to investigate time use and perception of importance and enjoyment of activities with middle-age adults in treatment for obesity (136), and examining predictors of occupational balance with adults and rheumatoid arthritis in adults under 65 years but without significant effect ($p=.07$) (137). It has also been used with particular diagnosis, for example stroke (adults but age not specified) (138), to identify levels of volition.

The OQ was the only screening tool that was discovered through the literature search; however there were a number of limitations identified with it 1) it required more than one appointment with the individual; 2) the client needed to have a copy of the scale and fill in one section prior to the session with the therapist; 3) the information was asked differently for each question which may pose an understanding problem if used in a quick screening environment; and 4) it was unlikely to be able to be utilised in over-the-phone data-gathering contexts.

Therefore, the OQ had limitations of applicability if clinicians were unable to meet with the individual more than once, or if remote administration was planned.

2.3.1 Summary of volition instrumentation

The literature review of studies pertaining to volition identified five instruments that stated they measured this concept. However, they are not appropriate for administration by phone or in a single session as they require direct interaction with an individual, observation, are time intensive due to the length of the tool, or more than one session with the client. There is no commonly used short validated screening scale of volition in conjunction with levels of participation, developed for clinical practice that can be used across settings (e.g. hospital, community, or phone interview). Therefore one needed to be created to address these requirements for use in studies 2, 3, 4, and 5 of this thesis. The resultant scale was adapted from the OQ and developed within the theory of the Model of Human Occupation (7) to give credence to the construct of volition incorporated in previous research.

2.4 What is the importance of being able to measure volition amongst older adults?

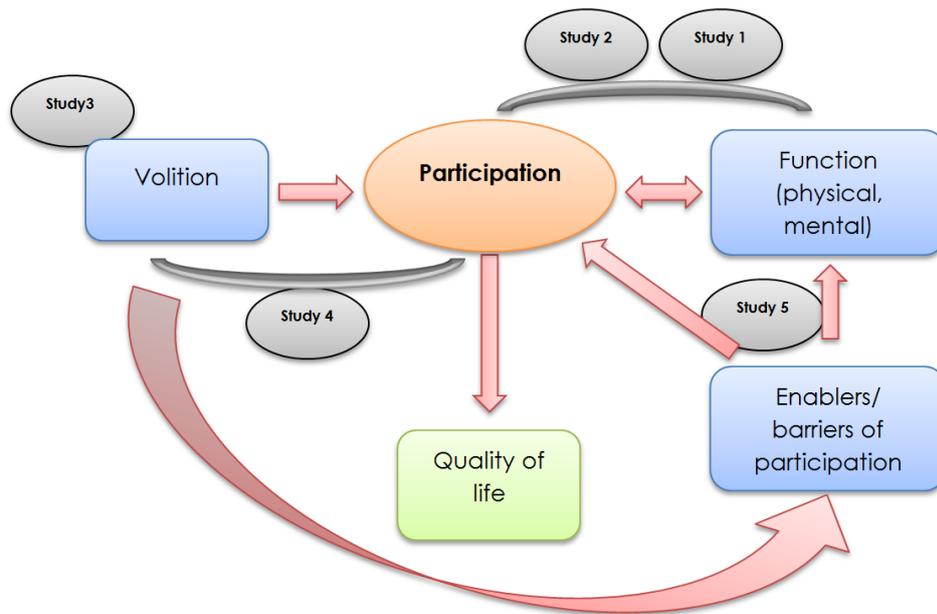
Presenting the concept of volition and identifying how it can be measured amongst older adults has the potential to identify which activities a person is more likely to engage in (i.e. activities with higher levels of volition). This in turn could influence the selection of activities incorporated in health rehabilitation programmes and lead to increasing overall participation levels within daily life, leading to a positive impact on the health and wellbeing amongst older adults. Therefore, the importance of measuring levels of volition is linked with how much an individual is likely to participate in an activity and provide more successful health outcomes amongst older adults.

The factors examined in this thesis (participation and volition) are based on the precepts of the two occupation models which consider why and how people choose to perform activities. The linking of volition and participation amongst older adults has been highlighted as a currently neglected area of research attention. Additional investigation is required concerning the impact of volition on

participation as a potential influence on adherence to health programmes (39, 99). Current gaps in research include the need to understand whether volition is associated with participation amongst older adults; what impact hospitalisation has on participation and volition following discharge; a brief screening scale for use in practice; and identification of the enablers of, and barriers to, participation following discharge home from hospital (59, 139). The absence of this research forms the method of inquiry covered in the remainder of this thesis. This is to gain additional understanding of this high risk group of older adults in order to build more sustainable health programmes that positively impact on their health and wellbeing.

2.4.1 Additional factors that influence participation

The factors relating to the central concept of participation that encapsulates the direction of this thesis have been presented in Figure 2.3. An established area of research recognises that participation leads to improved quality of life and will not be addressed. However, there were four outstanding areas of inquiry which led to the development of the studies contained in the remainder of the thesis. First, the interaction of physical and mental function on participation or how mental function affects participation is still unknown and this led to the conception of study 2. Second, the way in which volition is measured in clinical practice is not commonplace, nor is there a brief screening scale available in literature. This led to the development and validation of a screening scale of volition for use in clinical practice and presented as study 3. Third, the associations between participation and volition in the older adult population have not been elucidated, which precipitated study 4.



- Study 1:** Participation and falls; systematic review and meta-analysis
- Study 2:** Participation determinants; cross-sectional
- Study 3:** Construct validity of the Volition Scale; with Rasch Measurement Modelling
- Study 4:** Participation and volition; cross-sectional
- Study 5:** Enablers to and barriers of participation after hospitalisation; qualitative

Figure 2.3: Factors influencing wellbeing and positioning of studies.

The final factor explored in this thesis pertains to investigating enablers of, and barriers to, participation including the influence of psychological factors. An important psychological factor for participation in activities is *coping strategies* or the way people respond to adversity or health disruptions. Coping strategies have been explored in several studies including a longitudinal study of 287 older adults (≥ 65) in Britain (140). The study investigated whether baseline biological, psychological and social approaches to successful ageing predicted future quality of life for people living in the community. Results reported that the psychological approach (self-efficacy and optimism) to life and adversity, was predictive of quality of life ($p < .01$) (140). A longitudinal randomised control trial ($n=220$) of community-dwelling adults (20 – 71 years) in the United States investigated how expressions of optimism and gratitude impacted wellbeing (141). The study reported that participants showed increased life satisfaction over time when focusing on the future with optimism, although this was not specifically with the older adult population (141).

These studies reflect the growing body of evidence that people can develop coping strategies to gain control of their thinking and personal situations by changing their actions even when their circumstances cannot be changed (142). However, the enablers of, or barriers to, participation following hospital (including volition and psychological responses such as coping strategies) have not been fully examined within these fields. The lack of this research led to the development of study 5 with investigation of the factors that supported or inhibited participation following discharge (from the participant's perspective) in an effort to understand these further.

Many health intervention programmes currently implemented have not explored the complex interactions of the critical components of psychological and psychosocial health on participation amongst older adults. Research of programmes intended for older adult participants (e.g. falls prevention) is well evidenced (67) yet long term gains are still proving elusive (82, 143). Consideration of the influence of psychosocial factors upon participation, or how these factors impact health outcomes within these programmes post-discharge, was deemed deficient and required additional research.

2.5 Intent of thesis

2.5.1 Primary research question

The aim of this thesis was to understand occupational participation and the role that volition plays in the loss and recovery of participation in occupations amongst older adults who have recently been discharged from hospital. The primary question was: What is the impact of hospitalisation following a significant health event (that required admission to hospital), on participation of older adults who return to live at home? The specific aims following the systematic review were to identify demographic, physical and psychosocial determinants associated with participation in daily activities of community-dwelling older adults (aim 2, study 2); examine construct validity of the Volition Scale administered to community-dwelling older adults (aim 3, study 3); explore the association between volition and participation in daily activities amongst older adults living in the community (aim 4, study 4); explore enablers of, and barriers to, participation

in daily activities amongst older adults who have returned home following hospitalisation (aim 5, study 5).

The research aims of this thesis were addressed using two broader research projects. The first broad research project was a prospective longitudinal study that involved baseline (24) and follow-up studies separated over 12 months. Questions that were asked at baseline were not necessarily repeated at the follow-up and additional questions were used at follow-up that were not included at baseline. Separate studies were referred to when data were cleaved off to address one of the specific research aims. The development of these studies used the follow-up data only, thus in effect creating a cross-sectional design. Data from the first broad research project were used for three different studies (2, 3 and 4) which formed chapters four, five, and six of this thesis. The second broad project incorporated a purposive sample of older adults who were currently residing in hospital (due to a significant health event) and were intending to be discharged home. This data informed study 5 and reported in chapter seven.

2.5.2 Mapping of studies to research aims

The interactions between participation, volition and health outcomes are complex and require improved understanding of these connections to potentially decrease age related frailty and subsequent health care burden. This research has the potential to influence health programmes in the future to optimise outcomes and minimise service costs when clinicians are equipped with this knowledge. A series of four studies (additional to the systematic review) were completed to address the research aims. The mapping of these studies to the aims with identified publication status is represented in Table 2.2.

Table 2.2: Mapping of studies to research projects, aims, chapter and publications.

Title	Broader research project	Research aim	Chapter	Publication status
Study 1: The impact of falls prevention on participation in occupations of older adults following discharge: A systematic review and meta-analysis.	N/A	1	1	Published July 2013 <i>Disability and Rehabilitation Journal</i> IF 1.498
Study 2: Factors impacting the household and recreation participation of older adults living in the community.	1	2	4	Published 2014 <i>Disability and Rehabilitation Journal</i> IF 1.498
Study 3: Examining the construct validity of the Volition Scale (VoS) with community-dwelling older adults using the Rasch Measurement Model.	1	3	5	(under review)
Study 4: Exploring the association between volition and participation in daily life activities with older adults, living in the community.	1	4	6	Published 2014 <i>Clinical Rehabilitation</i> IF 2.191
Study 5: Enablers of, and barriers to, participation in daily activities from the older adults' perspective following discharge: A qualitative study.	2	5	7	(under second revision) <i>The Gerontologist</i> IF 2.283

2.6 Structure of thesis

This thesis was completed over three years (full-time) and contains identification of the issues of participation amongst older adults following hospitalisation with five studies written for publication. Chapter one presented an overview of the topic with background information of ageing, literature review, definitions/measurement of participation, factors impacting participation, the outcomes of participation and systematic review with meta-analysis (study 1). Chapter two explored the concept of volition with definition, the difference between volition and motivation, the importance of measuring volition, and the conceptual models that guide this thesis. It also presented a section on the structure and intent of the thesis. Chapter three provides general methods and information of the four subsequent studies to explore older adults in two settings;

community-dwelling and post-discharge. Chapters four to seven present the additional publications that arose from each of the completed studies. A précis is located at the beginning of each publication chapter to identify the link of individual studies to the overall theme of the thesis. Chapter eight illuminates the synthesis of findings from all of the studies, research/clinical implications and presents the overall conclusion. A synopsis of the chapter content is provided in Table 2.3.

Table 2.3: Chapter overview of content.

Chapter	Content
One	<ul style="list-style-type: none"> • Background with critical review of current literature • Topics discussed: ageing, health outcomes, participation (definition and measurement) • Theoretical concepts - Canadian Model of Occupational Performance and Engagement, and the International Classification of Functioning, Disability and Health framework • Study 1 (Published 2013): Systematic review and meta-analysis investigating the impact of falls prevention programmes on participation following discharge. (Results presented at three conferences, Appendix 2.2 a, b, c)
Two	<ul style="list-style-type: none"> • Volition – definition, measurement • Theoretical concepts - the Model of Human Occupation • Intent and structure of thesis
Three	<ul style="list-style-type: none"> • Design and general methods of remaining four studies • Details regarding participants, instrumentation and analyses selection with rationale provided
Four	<ul style="list-style-type: none"> • Study 2 (Published 2014): Cross-sectional study explored the correlation between participation and explanatory variables
Five	<ul style="list-style-type: none"> • Study 3 and publication: Construct validity of the Volition Scale (VoS) using Rasch Measurement Modelling. (Results presented at Victorian Allied Health Research Conference, Appendix 2.2 d)
Six	<ul style="list-style-type: none"> • Study 4 (Published 2014): Explored the correlation between volition with participation in the community-dwelling population through a cross-sectional design
Seven	<ul style="list-style-type: none"> • Study 5 and publication: Exploratory qualitative design to investigate enablers of, and barriers to, participation following hospitalisation
Eight	<ul style="list-style-type: none"> • Critical appraisal and synthesis of data presented • Future clinical and research implications discussed • Limitation of studies • Conclusion (overall conclusions presented at World Federation of Occupational Therapists Congress, Appendix 2.2 e).

2.7 Summary of chapter two

This chapter has presented the concept of volition and identified why this is important to consider when investigating participation in activities. It has explored the conceptual model which integrates volition with participation and presented evidence of how this links. Volition measurement possibilities currently available in

health were examined with a selection rationale presented. Additional factors that influence health and wellbeing were also discussed with links identified to the further studies presented in this thesis. This section concluded with a summary of the importance to further investigate psychosocial components of participation with older adults to promote the effectiveness of rehabilitation health programmes with older adults.

The second part of chapter 2 specified the intent, aims and primary questions of this project. It also described the mapping of the studies to these questions and structure of the thesis. The next chapter presents the methods of each of the proceeding four studies and how they were designed to address the research aims.

3 Methodology of studies

3.1 General Methods

3.1.1 Overview

The first chapter has identified the background, definition, and components of participation incorporating how it is an important contributor to health and wellbeing. The systematic review and meta-analysis (study 1) identified the dearth of empirical evidence related to investigation of the broader concept of participation in activities with older adults. It also established that health programmes (specifically falls prevention interventions) can have a positive impact on older adults' participation following discharge. Chapter two has elucidated the construct of volition, how this can be measured, and the interaction with participation.

This chapter describes the methods of the two broader research projects completed. These generated the data that were used to address the specific aims of this thesis with two types of data collection. The first research project utilised a two stage process for collection. Stage one incorporated random digit dialling from the Victoria (Australia) 2006 residential telephone records and reported in the parent study that investigated older adults' perceptions towards a range of falls prevention activities (24). That cross-sectional study targeted community-dwelling individuals (n=394) who were at risk of developing negative health outcomes due to ageing and therefore posed a high burden on the health system. Participants were presented (over the phone) with four falls-prevention strategies (evidenced-based) and asked if they thought these would be effective for them or for others like them (144). The findings identified that people thought these activities would be good for others but not for them as they were doing other activities that would prevent them from falling. At the end of that study the participants were asked if they would agree to participate in the 12 month follow-up study (stage two). These latter participants formed the sample population included in studies 2, 3 and 4. The role of the author for these three studies in this thesis was to; design the studies (identifying levels of participation and volition), identify the scales required for data collection, collection of data

(together with other investigators), and data analysis for the relevant studies (presented in detail in *General Declaration*).

The second research project targeted a purposive sample of older adults who were residing in hospital and intending to be discharged home. Data were collected at two time frames – demographics at the time of recruitment in hospital with quantitative scales and qualitative narrative collected at home following discharge.

The remainder of this chapter provides a synopsis, rationale for design, and analysis of each study. It describes the features for each study that are not included in the published papers. These are presented within the two broader research projects under the headings of design, participants, instrumentation, procedure, analysis and ethics with a summary presented in Table 3.1. Three studies have been published, one has been revised (as per reviewers comments) and resubmitted (study 5), one has been rewritten and submitted to a new journal (study 3), in peer reviewed journals. Refer to the mapping of each study to specific aim and publication in Table 2.2. The results of each study are presented in the manuscripts located in the corresponding chapters.

Table 3.1: Summary of studies 2-5 matching research questions.

	Research project 1 – data were used across three studies			Research project 2 – data were used in one study
	Study 2	Study 3	Study 4	Study 5
Research questions	What are the determinants of participation for older adults living in the community?	Do personal causation, values and interests measure volition? (Construct validity of the Volition Scale.)	What is the impact of volition on participation?	What are the enablers of, and barriers to, participation post-discharge?
Participants	Older adults (≥70) n=244, community dwelling in Victoria Australia	Older adults (≥70) n=244, community dwelling in Victoria Australia	Older adults (≥70) n=244, community dwelling in Victoria Australia	Older adults (≥65) n=21, post-discharge from hospital to own home in Victoria, Australia
Design	Cross-sectional - those who completed the 12 month follow-up from a previously reported random sample			Exploratory qualitative design, with quote sampling.
Methods	Phone interviews gathering demographics, participation in activities (household and recreation), physical health and mental health scores (including depression)	Phone interviews gathering demographics and volition data	Phone interviews gathering demographics, participation and volition data	Semi-structured interviews with demographics reported. Additional data included questionnaires - participation in activities, volition, physical and mental health, falls efficacy (not reported in the paper but reported in section 3.3.5 (below))
Analyses	Uni and multivariate linear regressions to determine associations of explanatory factors	Construct validity tested through Rasch Measurement Modelling, and exploratory factor analysis	Uni/multivariate linear regressions to determine associations between participation and volition	Inductive thematic analysis of interview data. Pearson correlations and Wilcoxon signed-rank tests - to determine recalled pre-post hospital volition and participation in section 3.3.5
Results	Identified in each publication Chapters 4,5,6,7			

3.2 Research project 1: studies 2, 3, and 4

3.2.1 Design

These studies were reported as cross-sectional in design as only data from the 12-month follow-up questions were used.

Rationale for selection of a cross-sectional design was to utilise the differences across the participants to identify their participation and volition levels, and determinants of participation at one point in time. Other designs were not viable for example; a longitudinal cohort study was not able to be completed within the funding scope or timeframes of the parent project follow-up study, a case-control design was not possible as this was a one off study to identify the current health and activity status of individuals – not exploring an intervention or change in variables. The Volition Scale was developed for use with this cohort.

Study 2

The dependent variable was identified as participation in daily activities (on household and recreation activity subscales) with the independent variables identified as demographics, physical health (health conditions and limitations) and mental health (emotional status, mood, depressive symptoms and limitations).

Study 3

The volition scores were gathered at one point in time for analysis to determine the internal construct validity of the scale with this older population.

Study 4

The dependent variable was participation in daily activities with independent variables identified as volition, demographics, physical health and mental health status.

3.2.2 Participants

These three studies utilised a randomised sample of older adults (≥ 70 years) living in their own homes in Victoria, Australia identified from a previous cohort study (24). Three hundred and sixty-eight people agreed to participate in the follow-up study (12 months later) and were contacted by phone. This resulted in 244 participants recruited for these three successive cross-sectional studies (response rate of 66%). The original inclusion criteria for the parent study were the same as

studies 2,3, and 4: ≥70 years of age, community-dwelling in Victoria, proficiency of spoken English, and without significant cognitive impairment (explained in detail in the resulting publications). Utilising a current database of randomly selected participants and nesting these studies within the parent study had both advantages and disadvantages. The advantages included expediency of data collection (within eight months of beginning the project), support for data collection from other investigators, support for data analysis, and management of the larger project by a project manager. The disadvantages were the restriction of time allowed for the responses for additional scales to be added to the study (participant burden), method of data collection was already set (by telephone), demographic data collection was already set, and exclusion criteria were already set.

3.2.3 Instrumentation

Four quantitative instruments were used in these studies from which all analyses were run (Table 3.2). These included three previously validated scales. The *Short Form-12 version 2* (SF-12 v2) to measure physical and mental health (145); the *Short Geriatric Depression Scale* (GDS15) to measure depressive symptoms (146); and the *Phone-FITT* interview survey to measure participation (1). The fourth scale utilised was the *Volition Scale* (VoS). This was developed due to the lack of a brief volition screening scale that could be administered over the phone (for study 2) and examined for psychometric properties in study 3 (147). The instruments used within these four studies are discussed below with identification of their psychometric properties and applicability for use.

Table 3.2: Instrumentation used in each study.

Instrument	Study 2	Study 3	Study 4
Short Form-12 v2 (physical and mental health)	✓		✓
Short Geriatric Depression Scale (depressive symptoms)	✓		
Phone-FITT (participation)	✓	✓	✓
Volition Scale* (volition)		✓	✓

* Validated in study three

The Short Form-12 version 2® (SF-12 v2) - physical and mental health measure

(License obtained for use of this online tool through Medical Outcomes Trust and Quality Metric Incorporated 18/07/12) (Appendix 3.1).

The SF-12 v2 (145) was selected as it was a validated and reliable scale to measure self-perceived ability and limitations from physical and mental health based on the respondent's perspective. It was used for studies 2 and 4 to gather data on psychosocial factors for this thesis. The SF-12v2 is a self-rating scale that investigates domains of function and health captured on a fixed Likert scale of either 1 to 3 or 1 to 5 (Appendix 3.2). The SF-12 v2 consists of 12 questions and was developed from the longer Short Form-36 (36 question) instrument (148). Both versions of the Short Form scales are widely used and recognised as being able to determine participants' health status in clinical trials. The 12 question version was developed to reduce participant/clinician burden, has been published in more than 1,800 clinical trials and provides a way of monitoring health status for individuals suffering from illness (145).

The SF-12v2 explores the individual's interpretation of how their physical or mental health status limits their involvement in life activities. The areas recorded include responses to physical function and limitations, pain, emotional health, mood, vitality (energy), mental health and socialisation. An example is question seven, "During the past four weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?"

The 12 questions are aggregated into two subscales which are known as *physical health component score (PCS)* and *mental health component score (MCS)*. Normative scores have been identified as 50 which indicate an active level of participation in daily life activities for older adults (145). A low score (0-49) in PCS indicates that a person's participation is limited to some degree through physical problems, body pain or general ill-health. A high score (51-100) indicates minimal to no limitations in physical ability, high energy and good health. Low scores on the MCS (0-49) denote psychological distress, social or role limitations due to emotional problems and poor health. Alternatively, high scores (51-100) signify positive affect, minimal limitations due to emotional problems and good health (145).

The SF-12 v2 is validated for use with people over 65 years of age and has evidence of validity and reliability. Two examples of good internal consistency data for the SF-12 v2 used with older adults has been reported as a Cronbach's

alpha of 0.89 for PCS and 0.86 for MCS (145); and with those with coronary disease 0.87 PCS and 0.84 MCS (Cronbach's alpha) (mean age 63.2 ± 9.5 years) (149).

The Short Geriatric Depression Scale (GDS15)

The GDS15 (146) was selected for use in study 2 as current health literature identifies that depression can have a negative impact on participation although this has not been extensively researched (150). The GDS15 scores were also utilised to enable comparison with the mental health component score on the SF-12v2 as discussed in study 4. It contains 15 questions used to identify depressive symptoms as an abridged version of the Geriatric Depression Scale (GDS) (148) which contained 30 questions (Appendix 3.3). The adaptation to the shorter scale was carried out in order to decrease participant and clinician burden by retaining questions from the longer GDS that had the highest correlation with depressive symptoms (151). The GDS15 is a screening scale to identify the likelihood of depressive symptoms (i.e. it is not a diagnostic scale), and can be used by a variety of health professionals. It has also been used as a monitoring tool in health economics to measure the cost-effectiveness of health programmes aimed at reducing depression (151).

The GDS15 requires "yes/no" answers and is scored against one of the prescribed bolded answers. The resulting scores are summed to obtain an overall score out of 15. The scoring interpretation legend is: 0-4 considered as "normal score" and indicates no depressive symptoms, 5-8 indicates mild depression, 9-11 indicates moderate depression and 12-15 indicates severe depression.

In a comparative study of the GDS long and short versions, both were successful in differentiating adults who were depressed from those who were not, with a high correlation ($r = 84\%$, $p < 0.001$) (152). The GDS15 reports an internal consistency of 0.80 (Cronbach's alpha score) (146). Validity has been reported in a recent meta-analysis (152) as 'high' in several studies with sensitivity of 77.4% (95% CI=66.3% to 86.8%) and specificity of 65.4% (95% CI=44.2% to 83.8%).

The Phone-FITT- participation in physical activities measure

The *Phone-FITT* interview survey (1) was selected because it identifies a variety of common home and community based daily activities which link to the concepts of occupation used within this thesis. It is a measure of participation in a variety of daily activities over two separate subscales (Appendix 3.4). First the *Household*

subscale which contains six activity items of light housework, meal preparation, shopping, heavy housework, home maintenance, caring for others. Secondly the *Recreation* subscale incorporates 11 items including lifting heavy weights or exercise designed to strengthen legs, lifting weights to strengthen arms, home exercises, walking for exercise, dancing, swimming, biking, golf, gardening and *other* physical activities. It contains a temporal component where people report the frequency that they are currently participating in the activity as well as the length of time this occurs. The inclusion of a temporal component when reporting participation has been posited (chapter one) as important to give a more accurate indication of what activities people are currently participating in.

In answering the *Phone-FITT* questions, the participant reports the *frequency* (f) and *duration* (d) of performing the activity within a “typical week last month” (1). *Frequency* is identified as the number of times per week the activity is performed and *duration* relates to the length of time the participant spends carrying out the activity on each occasion. The duration score is measured over four time categories of: 1 = 1-15 minutes, 2 = 16-30 minutes, 3 = 31-60 minutes and 4 = more than 1 hour. Summative activity scores can be calculated for each activity: $[x=(f+d)]$; and in each of the two subscales $[y= (x_1+...x_6)$ and $z=(x_7 +...x_{17})]$. An overall summative score of participation in all activities can also be calculated $[y+z]$.

The *Phone-FITT* has been validated for use with older adults to gather information over the phone (1). It has reported criterion and construct validity with older adults (79.4 ± 2.9 years): [Coeff: 0.29 (95%CI: 0.01 to 0.53) to .57 (0.34 to 0.73)]; -0.2 (-0.5 to 0.14) to -0.45 (-0.68 to -0.14); and test-retest reliability (seven days apart) [intra-class correlation: 0.77 (0.63 to 0.87)] (1).

The Volition Scale (VoS) - volition measure

The VoS (Appendix 3.5) was developed for this thesis as a brief screening scale that integrates the previously discussed components of volition stated as personal causation, values and interests. The three questions of the scale stated:

1. I think I do this activity very well (personal causation)
2. For me, this activity is extremely important (values)
3. I enjoy this activity very much (interests).

The VoS was developed from the Occupational Questionnaire (OQ) (Appendix 2.1) which was carried out for the following reasons:

- 1) The screening scale needed to be administered for the cross-sectional study through telephone interviews. As the OQ required a pre-meeting component (checklist) and also a face-to-face meeting, using alternative modes of administration would render the results invalid.
- 2) The answer schedule for the adapted scale needed to be consistent to reduce possible participant confusion over the phone. The OQ varied for each question which may have presented confusion particularly with the potential number of responses expected for each of the possible 17 Phone-FITT activities.
- 3) Due to the length of the telephone interview (for all the investigators involved) and perceived participant burden, the individuals could not be requested to complete a daily activities log prior to the phone interviews (as per requirement of the OQ).

To overcome these limitations the VoS was created with the expected benefits to include 1) ease and reliability that the scale could be administered over the phone; 2) reduction in possible participant confusion as the answer schedule was streamlined requiring consistent responses; and 3) acceptance of the scale within the clinical and research fields due to retention of the integral principles of occupational performance and volition that are widely evidenced and accepted. The resulting three question VoS included consistent answers on a five-point Likert scale (1-5) of strongly agree (1), agree (2), undecided (3), disagree (4), to strongly disagree (5). The VoS was therefore a new and not yet validated scale which required examining to ascertain psychometric properties. This was carried out in study 3 and reported in chapter five.

3.2.4 Procedure

Data collection procedure

Initial contact of potential participants from the database was made by phone. One of seven investigators telephoned to explain the follow-up study and gain consent for involvement in the research. An interview time was booked for an investigator to call and carry out the interview once the participant consented to

be involved. An information package was posted to each individual that contained a selection of answering codes, photos and diagrams pertaining to all survey sections. Each individual was called at the agreed appointment time (usually within one week of initial contact). The interview was completed with the participant following reconfirmation of verbal consent.

The seven investigators carried out the interviews over a six week time period following an individual training session on how to complete the survey from the project organiser. Time to complete the overall interview varied among participants and ranged between 40 and 70 minutes which included data for several other research studies beyond this thesis. The time taken depended on the length of responses given by the participants.

The first section of the survey was cognitive screening ("Short orientation-memory-concentration test" (154)) which the participant needed to 'pass' in order to progress through to the rest of the interview. This incorporated six questions to ascertain that the participant met the minimum cognitive requirements for inclusion:

1. What year is it?
2. What month is it?
3. What time is it? (+/- one hour permitted)
4. Count backwards from 20 to 1
5. Say the months of the year backwards (in reverse order)
6. Repeat the memory phrase (the person's name and address that I told you earlier)(154)

Scoring of the cognitive screen identified responses as being correct or incorrect as per the marking requirements of the scale. Scores were entered into the database and summed at the time of interview to determine eligibility. If the participant did not meet the requirement of scoring 12 or less, then they were thanked and the interview was ceased. For the remainder who met the cognitive requirement, the interview was completed. An option of completing the interview over two timeframes was offered as required, due to the length of survey and possible participant fatigue.

Gathering demographics and quantitative data

Studies 2, 3, and 4 utilised a selection of data from the larger phase two follow-up study. This incorporated data gathered for five researchers during the same phone interview for their respective studies. The interview included a number of general questions used by all researchers together with specific instrument selection for individual studies. The general demographics and data utilised for the studies planned to address participation and volition are identified in Table 3.3. Health status indicators incorporated identifying if people had been diagnosed with arthritis, heart disease, stroke, depression/anxiety, diabetes, lung disease, cancer, osteoporosis, Parkinson's disease, visual impairment, cataracts, joint replacements, inner ear dysfunction and broken bones since 60 years.

Following collection of demographics and health status the quantitative scales were completed. The data for the studies (2, 3, and 4) took around 12-18 minutes depending on the answers given by the individual for the respective scales. Data were entered directly into Survey Monkey® at the time of the interview by the investigator.

Table 3.3: Demographics collected for each study.

	Study 2	Study 3	Study 4
Age	✓	✓	✓
Gender	✓	✓	✓
Living situation	✓	✓	✓
Hospital admission past 12 months	✓	✓	✓
Number of days in hospital (12 months)	✓	✓	✓
Health conditions	✓	✓	✓
New diagnoses in last 12 months	✓	✓	✓
Falls previous 12 months	✓	✓	✓
Perception of risk of falls			
Group exercise			
Home exercise programme (past/current)			
Home visits (in the past)			
Assessment and multifactorial interventions			
Psychoactive medications			
Short orientation-memory-concentration test	✓	✓	✓
Hawthorne effect; demographics, footwear, diet			
Friendship Scale			
Short Geriatric Depression Scale	✓		
Risk of falls			

3.2.5 Analysis

A number of analyses methods were used throughout these three studies (Table 3.4). The rationale for method selection is discussed within each publication.

Table 3.4: Analysis methods of studies.

	Study 2	Study 3	Study 4
Linear regression	✓		✓
Rasch measurement modelling		✓	
Spearman's correlations		✓	

Studies 2 and 4

These two studies utilised regression analysis to determine associations between the dependent variable (participation) and the explanatory factors in study 2 - demographics, physical health and mental health; in study 4 – volition, physical health, mental health and demographics. All statistical analyses were completed using STATA version 11.2 (155). Causality could not be determined through the results as these were cross-sectional studies that identified data from one point in time only (phone interviews).

The assumptions for the analyses followed the principles of linear regression where the relationship is approximately linear, the prediction error is unrelated to prediction value, there is normal distribution of the residuals above the fitted line, and that the residuals are independent of each other (156). A series of simple linear regressions were initially conducted to determine which explanatory factors reached significance which was set at $p \leq .05$ (Equation 3.1).

$$y_i = \beta_0 + \beta_1 x_i + e_i$$

(β_0 is the intercept and β_1 is the slope)

Equation 3.1: Simple linear regression

From Tranmer M, Elliot M. Multiple Linear Regression. UK: Cathie Marsh Centre for Census and Survey Research; 2008.

The variables were then combined into multiple linear regression analyses to determine the association of participation with any modifying factors and to test for the model of best fit. Strength of association was quantified by using the sample squared multiple correlation (R^2). Model assumptions were assessed by

plotting normal probability and standardised residuals versus predicted values. These are represented in Equation 3.2.

$$\gamma_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \dots + \beta_p x_{pi} + e_i$$

(x = explanatory variables)

Equation 3.2: Multiple linear regression (157)

From Tranmer M, Elliot M. *Multiple Linear Regression*. UK: Cathie Marsh Centre for Census and Survey Research; 2008.

Residual checking was carried out for each model including checks for normality, homogeneity, linearity, and influence. *Residual* is the difference between the observed and the predicted value; *normality* is about determining that the errors are normally distributed so that the data are not skewed possibly rendering the results invalid; *homogeneity* refers to determining that the spread of y is constant for each x_i ; *linearity* is to determine that a true association exists between y and x; and testing for *influence* is to determine that there are no observations that exert undue influence on the coefficients (155). If data did not reach normality (show a normal distribution produced on a histogram graph) then a ladder of powers test (158) was performed to identify which data transformation were required before further analysis. Following transformation of data (if required) a backward stepwise regression was then performed. This is where the variables that did not reach significance (set at $p \leq .05$) in the multiple regression model, were withdrawn one by one (highest p value first) until the most parsimonious model was recognised. This represented the best model fit and is presented in the results section of each relevant study.

Study 3

The reliability and validity of a measure is important for clinicians across practice contexts to ensure accurate use and reporting of the instrumentation used. *Reliability* is about the extent that you can rely on the results being repeatable on different occasions. That is, other researchers must be able to perform the same experiment under the same conditions, and yield similar results. There are three components of reliability that include *stability*, *internal consistency* and *equivalence* (159). *Stability* is concerned with the consistency of the measure over

one or more occasions of time. Test-retest consistency is an example of this, where the test is given more than once to the same subjects under the same circumstances (at least two different time periods). This determines that there is agreement with the results over time.

The second is *internal consistency*. These tests determine that the individual items of the scale do indeed measure the construct being tested and are predominantly used with pen-and-paper measurements. A correlational procedure is performed between two sets of data (e.g. results split in half) (159). The higher the correlation between the two scores, the higher the reliability. For example, these can be performed through a Cronbach's alpha test of reliability or Kuder-Richardson formula statistical procedure (159). The correlation coefficient is generated between 0 and +1, with 0.80 to 1 being considered as adequate to highest reliability.

The third component is *equivalence* which can be measured through two tests of *inter-rater reliability*, and *alternate forms* (159). This determines that the results are accurate across two or more raters completing the administration of the measure, or the same rater administers the measure on two different occasions. The number of agreements is compared with the number of possible agreements and multiplied by 100 to obtain the percentage of agreement. A higher score is more desirable (159). The alternate forms test compares two versions of the same pen-and-paper measure administered to one group of participants at the same time. However this is dependent on two forms of a measure being available.

Along with reliability measures must also be *valid*. This refers to the critical issue of the relationship between the concept and the measurement (159). There are three basic types of validity including *content*, *criterion*, and *construct* (159). *Content validity* obtains support that the items within the measure do indeed measure the intended construct. This can be through a collation of an extensive literature review, expert opinion, as well as testing (e.g. Rasch analysis).

The second type is *criterion validity* where comparison of the measurement of interest is carried out with another instrument that has proven accuracy. There are two types of criterion validity. *Concurrent validity* – where another instrument that is considered to be a gold standard is available that also measures the same concept of interest and both instruments are completed by the same group of

participants with the results compared, and *predictive validity* – where the instrument predicts or estimates the occurrence of the behaviour or event (159).

The third type is *construct validity* where a theoretical rationale is developed. The researcher follows specific steps to create the supporting evidence of the instrument and the theoretical constructs on which it is based (159). This complex approach usually occurs throughout a series of progressions over time.

Consideration of the research question and the sample population is required in determining which instruments to use in clinical practice or research. These factors will also determine which type of reliability or validity testing is required for tools that have not already met these requirements. There are a number of subtypes of construct validity including divergent validity, convergent validity, discriminant validity and factorial validity. Selection of the appropriate method for testing validity of an instrument is required to be made.

To determine the internal construct validity of the newly developed VoS, data were analysed by the application of the Rasch Measurement Model (RMM) to examine if they measured the overall construct of volition (160). RMM is a model of analysis that is used in social sciences and provides invariance (or the evidence that the same construct is being measured across the groups), and interval scaling (to determine the units of measurement between each number). This contributes to determining construct validity for rigorous outcomes with identification of the interaction between the item (being measured) and the person (their ability) within the overall construct.

There were three unknowns of the VoS that required analysis. It was unknown if the response scores of the VoS indicated the same value across the items; if the intervals between the scores and items were the same; or if they could be summed in order to provide an overall score of volition. The RMM was selected as the preferred mathematical model which does not assume that each item has the same value or replicates the same level of difficulty.

Rasch is the simplest form of an Item Response Theory (IRT) which investigates the probability that a person with a particular trait will correctly answer an item with a particular level of difficulty (161). Rasch analysis is a way of measuring a construct that is not observable which is indicated in this thesis by the construct of volition.

Rasch is a *one-parameter logistic model* (1PL) (162) and can be presented in the following Equation 3.3.

$$P(X_{is} = 1 | \theta_s, \beta_i) = \frac{e^{(\theta_s - \beta_i)}}{1 + e^{(\theta_s - \beta_i)}}$$

X_{is} refers to response (X) made by subject s to item i

θ_s refers to the trait level of subject s

β_i refers to the difficulty of item i

$X_{is} = 1$ refers to a "correct" response or an endorsement of the item

e is the base of the natural logarithm (i.e., $e = 2.7182818 \dots$)

Equation 3.3: Rasch measurement model

From Furr MR, Bacharach VR. *Psychometrics: An Introduction*. Thousand Oaks, US: SAGE; 2008.

The value of $P(X_{is} = 1 | \theta_s, \beta_i)$ refers to the probability that the subject will respond to the item correctly. This depends on the subjects' trait level (θ_s) and the item difficulty (β_i). The results produce a hierarchical scale of items (easier to hardest) identifying both *person ability* and *item difficulty* (163). This is based on the principle that the way a person responds to an item results from the interaction between the individual and the item difficulty and can vary across questions.

Rasch analysis is able to indicate which items fit the model in order to establish the relationships between the items and the weight of these within the overall construct. It identifies if people respond to the questions/scale in a consistent and logical manner. Additionally, if few people answer an item correctly this is indicative of a more difficult or challenging item. This can provide a direction for listing the items so that the individual answers the easiest ones first in a multi-itemed scale. This factor is not as crucial in the case of a three-item scale like the VoS.

Principles of the RMM include *dimensionality*, *hierarchical ordering* and *differential item functioning (DIF)* (163). *Dimensionality* is about examining the individual attributes and how well these fit the suggested model to ascertain whether they do indeed measure the overall construct; *hierarchical ordering* identifies which items are easier or hardest to perform; and *DIF* is about identifying if the constructs

establish consistent difficulty of the items when used with different groups of people to determine if the test items are biased. This is done within a hierarchical line of enquiry of *more than* or *less than* (163). Validity is confirmed when the statistics fit within the acceptable range and if most of the variance can be explained by the data (indicating unidimensionality), which is one of the assumptions of Rasch analysis for each item. Interpretation of the results in relation to "fit statistics" (*infit* and *outfit*), hierarchical ordering of the items, and DIF (163) are presented in manuscript three (chapter five). Data were analysed using the Winsteps® programme (164).

The procedure to carry out the RMM on the ordinal responses from the participants required formatting of the volition scale scores into four columns of variables. This included person identification number, personal causation, values, and interests (raw scores on the Likert scale 1 to 5 for each). An exploratory factor analysis is advisable prior to completing the RMM. This is to determine if there are any interactions between the items which may skew the results. Therefore Spearman's correlations (165) were carried out to identify any inter-relationships between the three volition items and age or gender that needed to be considered. The results of this analysis are reported in the manuscript presenting study 3 (chapter five).

3.2.6 Ethical considerations

All studies were carried out according to the National Statement on Ethical Conduct in Human Research (2007) produced by the National Health and Medical Research Council of Australia.

Ethical approval was gained for studies (resulting from research project 1) through Monash Health and Monash University Human Ethics Research Committees (Appendix 3.6). Reference number documented as MUHREC CF11/3625: 2011001912 and entitled "Attitudes to falls and falls interventions in the community". Contribution to the ethics application was made regarding the selection of instruments that were incorporated for the participation and volition studies.

3.3 Research project 2: study 5

3.3.1 Design

An exploratory qualitative design (166) was used to explore the enablers of, and barriers to, participation from the older adults' perspective subsequent to a stay in hospital. Rationale for the selection of this design was that it was the most effective way to answer the research question.

3.3.2 Participants

The purposive method of recruitment sought a quota sample of older adults residing in hospital with the aim of returning home on discharge. This aimed to represent a proportional amount of male and female (approximately equal numbers), across settings acute and rehabilitation (approximately equal numbers), and a spread of age groups (65 to 90s). The final cohort represented this quota and is presented in Table 3.5. Details of recruitment strategy are discussed in the manuscript presented in chapter seven.

Table 3.5: Participant recruitment results.

Gender	Setting		Age
	Acute	Subacute	
Male	✓		95
Male	✓		91
Female	✓		72
Male	✓		74
Male	✓		76
Male	✓		75
Female		✓	82
Male		✓	88
Female		✓	94
Female	✓		85
Female	✓		82
Male		✓	81
Female		✓	68
Female	✓		89
Female	✓		80
Male		✓	95
Male		✓	71
Female	✓		70
Male		✓	90
Female		✓	85
Female		✓	86
Female		✓	Withdrew
Male	✓		Deceased
Female		✓	Withdrew
Female		✓	Withdrew

3.3.3 Instrumentation

The scales used with this cohort included two previous measures as described in research project 1 (the *SF-12 v2*, and the *Volition Scale*) with one additional –the *Modified Falls Efficacy Scale* (Table 3.6). These were collected in the participants' home at the time of the semi-structured interview.

Table 3.6: Scales used in study 5.

Instrument	Validated	Not-validated
Short Form-12 v2 (physical and mental health)*	✓	
Volition Scale (volition)*	✓	
Modified Falls Efficacy Scale**	✓	
Participation levels through discussion		✓

* As used in studies 2, 3, and 4

** Additional scale

Modified falls efficacy scale (MFES)

The MFES (167) was selected due to the impact that fear of falling has on participation levels in older adults. The MFES is a scale that measures the degree of self-perceived confidence that an individual has to perform an activity without fear of falling (Appendix 3.7). Decreased confidence to perform activities can lead to hesitancy to perform activities and be an inconsistent mediator of decreased function leading to reduced participation (168). The MFES was adapted from the Falls Efficacy Scale (FES) (169) by adding four questions to the previously validated scale, in order to increase its sensitivity to participation in community activities (167). The main question of the MFES is "On a scale of 0 to 10, how confident are you that you can do each of these activities without falling". Specific activities are then stated and range from "get dressed and undressed, answer the door or telephone, to crossing roads" (169).

Scoring values equate '0' as unable to perform the task due to fear of falling, to '10' being able to perform the task with complete confidence. If the person does not perform a particular task for any physical or social reason (e.g. the activity may be within someone else's role to perform) then the score for that specific question remains blank (167). Overall final scores are averaged through calculating the score of each answer and dividing by the number of completed questions.

Psychometric properties of the MFES have previously been reported. A two-group convenience sample study was completed to examine the psychometric properties of the MFES between healthy older adults (n=179) and those referred from a falls and balance clinic (167). Each participant was given the MFES to score twice (one week apart) to ascertain their level of confidence with performing activities. The healthy older adults (control group) reported minimal or no fear of falling with mean confidence score of 9.76 [SD = .32], compared with the participants from the falls and balance clinic who scored a mean score of 7.69 [SD = 2.21]. Re-test reliability was reported as *high* with an intra-class correlation coefficient of 0.93, with internal consistency of 0.95 (Cronbach's alpha) (167). Findings indicate an associative effect with reduced strength, balance and endurance. Causality has not yet been determined between fear of falling and decreased participation or indeed falls (168) however it has been associated with

reduced participation (32). Therefore fear of falling is an important moderator to consider for ongoing research with older adults.

Participation levels

Participation levels were gathered through discussion in the interviews with numerical data collected using the scoring method of the Phone-FITT (1). The complete scale was not administered due to the anticipated participant burden and time constraints for the home interview. Participants were asked to identify a selection of activities that they currently performed under the occupation headings of self-care, productivity, and leisure with a minimum of one activity requested under each. The scoring identified the *frequency* (the number of times the activity was performed in a typical week) and *duration* (the minutes per session) of the activity performed. Pre- and post-hospital participation scores were asked to be recalled for each of the activities the participant identified. Summative scores were calculated (as per the Phone-FITT) of frequency and duration ($f+d$) to provide an indication of participation levels (pre- and post-hospitalisation) where zero indicated no participation (Table 3 .7).

Table 3.7: Example of participation in activities, pre- and post-hospital (participant 2).

	Self-care (shopping)		Productivity (cooking)		Leisure (bowls)	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Frequency ^a	2	2	21	14	2	0
Duration ^b	3	3	4	4	4	0
Participation level ^c	5	5	25	18	6	0

^aFrequency = number of times per week; ^bduration = 1: 1-15 mins, 2: 16-30 mins, 3: 31-59 mins, 4: more than 1 hour; ^cparticipation level = ($f+d$)

An alternative method of collecting the participation data was to complete an activities diary. This could have been used from discharge through to the time of the home interview and has the potential to increase the accuracy of participation data and reduce the risk of recall bias. This was however, not included with the study design as the semi-structured interview was based around the information provided from the Phone-FITT and the Volition Scales included in the original studies. The investigators also did not want to overburden the participants with filling in a daily activities diary.

3.3.4 Procedure

Procedures for study 5 are discussed in detail in chapter seven, which began with identification of individuals who met the inclusion criteria while they were residing in hospital. Discussion of the study information was given to the potential participant and consent was obtained. A tentative time for the home interview was then set (within six weeks) and demographics were gathered. These included age, gender, living situation, days in hospital (last admission only), health conditions (as described by participant only), any new diagnoses in last 12 months, falls recalled over previous 12 months, falls recalled since hospital, ethnicity and primary language spoken. If full information could not be gathered in hospital, then the remainder was collected during the interview at home.

The interview began with introduction to the general purpose of the discussion and conversation to build rapport. Quantitative data (scales) were then gathered. These included scoring of the SF-12v2 for physical health and mental health status; the MFES to determine levels of confidence with activities; a discussion on participation in specific activities (pre- and post-hospital); and the VoS (pre- and post-hospital) to determine level of volition in the stated activities. The in-depth interview using semi-structured questions then followed and is described in chapter seven.

Demographic data

The demographic data were gathered under the headings presented in Table 3.8. These were determined through the results of studies 2, 3, and 4 as identified moderating factors of participation with an additional factor to confirm their ability to converse in English for the interviews. Health information was gleaned through participant report only, as medical notes were not accessed as part of the study.

Table 3.8: Demographics collected for study 5.

	Study 5
Age	✓
Gender	✓
Living situation	✓
Number of days in hospital (12 months)	*
Health conditions	✓**
New diagnoses in last 12 months	✓
Falls previous 12 months	✓
Falls since hospital	✓
Ethnicity	✓
Primary language spoken	✓

* Current admission only

** Participants offered health information only within the semi-structured interviews.

Semi-structured interviews

The interview was carried out to gather in-depth data on return to participation following hospitalisation from the participants' perspective. Semi-structured questions were previously developed following discussion with supervisors with an aim to explore the individual's experience. This included what level of participation they had before and after hospital?; what stopped them from returning to participation in activities post-discharge?; and what supported them to do this (Appendix 3.8). Probing the responses for further information extended the information gathered to identify personal motivators for participation and what was important (held meaning) for them to continue engaging in specific activities. Interviews were audio taped and transcribed verbatim and tended to pose a version of the following questions to the participants:

- Can you tell me about what you do in a day since hospital?
- What were you able to do before you went to hospital?
- Has it changed/ why?
- What are the factors that have contributed to this?
- What supports you to return to activities?
- What gets in the way of returning to activities?
- Who/what is important in assisting you to return to these levels of participation? Why? How?

3.3.5 Analysis

Inductive thematic analysis

Study 5 utilised inductive thematic analysis for the narrative data (166). Electronic transcripts were coded by the researcher using the NVivo computer programme (170) and then analysed. Field notes including observations, impressions and summary of information following each interview were kept by the researcher and were used to summarise the main points of each visit and help shape the themes. The principles of *inductive* thematic analysis are based on the emergence of themes from the data rather than imposing a theory upon the data that the researcher is attempting to confirm (*deductive* thematic analysis). The six specific steps utilised for the inductive analysis were identified from Braun and Clark (166), and illustrated in Figure 3.1. These are described more fully in study 5 (chapter seven).



Figure 3.1: Thematic analysis process (166)

This method of analysis identified two types of codes, semantic and latent (166). The semantic codes are the more concrete/factual ones which first emerge. For example “my family is always ringing up” could be coded as family support as a semantic code. However depending on the context and themes that develop from the remainder of the participant's narrative, this statement could be interpreted as an example of stifling independence or impeding the ability to take risks and develop one's own sense of self-efficacy. The latter is more of a latent, underlying theme that needs to be supported throughout the narrative and has been interpreted by the researcher. Themes are expected to be developed through the lens of the researcher with continual immersion in the participants' transcripts and emergent themes.

Analysis of the narrative included exploring the data in varied ways. One method was by creating a thematic mind map to clear the mind of previous assumptions and develop understanding of the emerging relationships between the themes (Appendix 3.9) (171). Another method was to contrast the issues raised by the

participants within the emergent codes using a matrix analysis approach to search for deeper meaning of the information given (170). An example of this was completed with the codes “barriers” and “limitations”, which were cross-referenced with “positive attitudes” and “negative attitudes” to determine what responses were related from which participants (Table 3.9).

Table 3.9: Matrix coding of factors (example).

	Themes identified	
	Attitude – positive	Attitude - negative
Barriers	8	24
Limitations	21	26

Presenting a study that is robust and valid is important for all study designs although it is more difficult with qualitative studies. This is due to the expected interpretation of the data by the researchers, which does not have a predicted path or assumptions (unlike quantitative analysis). Validity of qualitative data (showing what it claims to show) can be completed in a number of ways and as yet no consensus of approach has been established in current research (166). The most relevant method of identifying validity in qualitative research is identified as “ecological validity”, which is the relationship between the data and that it reflects the “real world” (166). Two common techniques available to confirm validity of qualitative data are *member checking* and *triangulation*. *Member checking* involves a process where selections of transcripts and coding themes are presented back to participants in an effort to check the interpretation of the researcher for accuracy of meaning. It is important to identify the process that will occur if the resultant information is contrary to the developing themes. *Triangulation of data* involves cross-checking through comparison of data that were drawn from two or more different sources, or several individuals (e.g. theoretical, investigator, analysis, methodological) (172). This method can be viewed as a way of obtaining a richer story, rather than an “accurate” one – as some researchers suggest that there is no one “truth” that exists (166). Additional methods have been identified as *disconfirming evidence* – where information is presented that is contrary to the one in current research, and *examination of data by a colleague* that has expertise in the area but is not involved in the project (173).

Testing for reliability of findings in qualitative methods is more limited, yet possible. One method is through identifying the degree of inter-coder agreement. Completing a check for agreement between two or more coders is one method of validating results for qualitative analysis and increasing robustness of the coding (166). Validity and reliability procedures with study findings are discussed in full in chapter seven. Inter-rating coding comparison printouts are presented in Appendix 3.10 a, b.

3.3.6 Ethics

Ethical approval for study 5 was gained through Monash Health and Monash University Human Ethics Research Committees (Appendix 3.11). Reference number was MUHREC CF12/3220 – 2012001609 entitled “Understanding occupational participation (in activities of daily living, productivity and leisure) in adults 65 years and over, following hospitalisation”. Changes prior to approval included three minor print alterations and a safety protocol to be submitted for the home-based interviews. Ethical considerations were covered in the application to identify any possible “adverse or unforeseen” circumstances that required mitigation. These are presented and discussed next for both the *participant* and the *researcher*.

For the participant

There were no anticipated harms to the participants from this study however it was possible (although unintentional) that the questions asked may have elicited an emotional response. A referral would be made to the relevant health professional with the consent of the individual and any incident reported to the Monash Health Human Research Ethics Committee. This was considered if a person identified undue distress; the participant was deemed by the researcher as being “at risk”; or required further input/treatment (for any kind of intervention). However, the probability of causing distress was minimal based on similar research previously conducted by the researchers.

Interviews were anticipated to last around 45 minutes to one hour and this was considered to be a reasonable demand on participants' time for research. Participants were informed at the beginning of the interview that they may pause at any time or split the interview over two sessions. The second part of the assessment could be carried out by phone on another day. A planned check-in

time was made for 30 minutes into the interview for permission to continue. The researcher would monitor the participant's energy/fatigue levels and respect their wishes to take a break or discontinue the interview if required. This would also occur if participants became distressed.

For the researcher

Safety for the researcher was required to be addressed as they would be entering an person's unknown home environment. The following plans were put in place.

- Visits would follow best practice procedures for clinician home visits
- Safety procedures would be put in place including a log of visits left in the office and with a significant other person
- Phone 'check-in' with a nominated person would be carried out after each visit and a protocol of what to do if these contacts failed to occur would be in place.

The researcher that completed the home visits (author of this thesis) had more than two decades of clinical practice (as a registered occupational therapist) which included a large number of home visits to unfamiliar environments. Therefore, she was aware of the possible dangers of home visits and had strategies in place to manage any complications. A safety plan was completed prior to the interviews and adhered to for all visits.

Risk of coercion

Coercion for the participant to participate was considered within the research design and incorporated processes to minimise this possibility. The risk of coercion was identified as 'minimal' due to the fact that the researcher was not directly involved in the participants' direct care. However, the risk was further reduced by having a two tiered consent process. Contact was initially made by staff members on the ward that the participant may or may not know. They gave a brief outline of the research and discussed the possibility of talking to the researcher to gain more understanding of the study. The researcher was notified following participant agreement to discuss further and they were then visited on the same day.

The individuals had two opportunities to say "no" and not participate in the research, once with the clinician, and once with the researcher. Information was

reinforced that no negative consequences for ongoing treatment was present, regardless of whether the participant declined to participate or withdrew part-way through the study. Full details of the study requirements, expectations, and time commitment were provided on the information/consent forms. These were discussed in full with the individual and/or family member prior to signing consent or interviews being arranged (Appendix 3.12).

3.4 Information management

Gathered data were stored securely and would be kept for the appropriate time frames as per Monash Health policies and procedures. All information used in dissemination of results currently, or in the future, will be anonymous, and pseudonyms have been assigned. All memory sticks and computer recorded information pertaining to participants have a password entry requirement.

3.5 Summary of chapter three

This chapter has described the methods of the remaining four studies that investigate participation in daily activities amongst older adults. Information followed a systematic section approach under two research projects. Three of the studies (2, 3, and 4) were completed from the same cohort (research project 1) and one (study 5) from research project 2. Study 5 reported the qualitative findings of this investigation only but has additional quantitative analysis results reported as an addendum to this study in section 7.2. This was due to the lack of power of the number of subjects for the quantitative analysis and was not included in the publication. The next four chapters present these published or submitted studies and are linked to the overall thesis aim of investigating participation in daily activities amongst older adults, with a précis documented at the beginning of each chapter.

4 Determinants of participation

Study 2:

Factors impacting the household and recreation participation of older adults living in the community.

Authors: Pritchard, E., Barker, A., Day, L., Clemson, L., Brown, T., & Haines, T.

Published in the *Disability and Rehabilitation* journal – February 2014

(Appendix 4.1).

4.1 Précis

Chapter three has described the methods, participants, design, and analyses for the successive four studies designed to explore participation amongst older adults. It identified the considerations taken in the planning of each of the studies. There are many remaining areas that require further investigation in an attempt to understand participation in daily activities amongst older adults from this broader perspective. A profile of participation amongst community-dwelling older adults was not available in the literature and needed to be explored. Three areas of questioning included what are the participation levels of older adults?; what activities do they generally engage in?; and for what time span (frequency and duration) do they participate in them? Exploring these questions would provide greater understanding of the "normal" participation levels for older adults so that comparisons can be made with changes following hospitalisation. If health professionals are aware of the profile and determinants of participation, these could potentially be addressed in a more successful manner in order to increase adherence to intervention programmes and improve long-term health and wellbeing.

These questions have led to the development of study 2, which was designed to further explore participation in activities. This cross-sectional study examined a sample of older adults residing in their own homes in the community. The question that was investigated stated, what are the determinants of participation for older adults living in the community? The determinants explored included demographic characteristics (e.g. age, gender, living situation), physical health and mental health status (including depression).

Results reported two significant associated variables with participation, 1) higher levels of depressive symptoms with restricted participation in household and recreation activities ($p < .001$, $p < .001$); and 2) fewer falls (during the previous year) with restricted participation for household activities only ($p < .001$). These findings have clinical implications for health professionals and are extrapolated in the following published paper. The implications of these results for clinical practice will also be revisited in the summary (chapter eight) of this thesis.

PART B: Declaration for Thesis Chapter four

Monash University

Declaration by candidate

In the case of Chapter four, the nature and extent of my contribution to the work was the following:

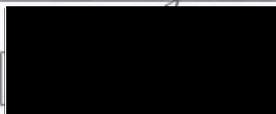
Factors impacting the household and recreation participation of older adults living in the community.	Extent of contribution (%)
Nature of contribution	
Data gathering	50%
Extraction of data the database	90%
Calculation of data analysis	100%
Cross-checking data analyses	70%
Write up of manuscript	100%
Submission of manuscript to journal	100%
Subsequent revisions to manuscript as required by journal	80%
Primary author – Elizabeth Pritchard	80%

The following co-authors contributed to the work. Co-authors who are students at Monash University must also indicate the extent of their contribution in percentage terms:

Name	Nature of contribution	Extent of contribution (%) for student co-authors only
Anna Barker Associate supervisor	Editing of draft of manuscript Guidance provided for data analyses Cross checking of data analyses Intellectual input to the study Guidance provided for subsequent revisions required by the journal	
Ted Brown – Associate supervisor	Editing of draft of manuscript Intellectual input to the study Guidance provided for subsequent revisions required by the journal	
Lesley Day co-author	Editing of draft of manuscript Intellectual input to the study	

Lindy Clemson co-author	Editing of draft of manuscript Intellectual input to the study	
Terry Haines Primary supervisor	Intellectual input to the study Editing of the draft of manuscript Guidance provided for data analyses Cross checking of data analyses Guidance provided for subsequent revisions required by the journal	

Candidate's
Signature



Date

15/5/14

Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s)

Allied Health Research Unit - Kingston Centre

[Please note that the location(s) must be institutional in nature, and should be indicated here as a department, centre or institute, with specific campus identification where relevant.]

Signature 1



Date

15-2-14

Signature 2

Signature 3

4.2 Published article 2

4.2.1 Abstract

Purpose:

To identify demographic, physical and psychosocial determinants associated with participation in daily activities of community-dwelling older adults.

Method:

A cross-sectional design of older adults (≥ 70 years) from Victoria, Australia residing in their homes was drawn from a convenience sample. The outcomes were recent participation in household and recreational activities as measured by the *Phone-FITT*. Explanatory variables included; demographics, physical and mental health functioning (*Short Form-12v2*, *Geriatric Depression Scale 15*). Associations were analysed through linear regression.

Results:

There were 244 participants (60% female), with a mean age of 77.5 years (SD 5.7). Higher levels of depression and fewer falls (during the previous year) were independently associated with restrictions in household participation ($p < .001$, $p < .001$). For recreational participation, higher levels of depression were associated with restricted participation ($p < .001$).

Conclusion:

Screening for depression should be a key component of health assessments with older adults. Untreated depression may lead to lower participation rates in daily activities potentially resulting in social isolation. Fewer falls and restricted household participation were associated but no association was observed between falls and recreational participation. Further studies are required to explore this association in more detail.

Short heading: Factors impacting participation for older adults

Key words:

Activities of daily living, depression, older adults, social participation.

4.2.2 Introduction

Participation in daily activities and social roles has become an important aspect to consider in health settings (13, 39, 174). Participation is defined as “engagement in a life situation” (47) and has been linked to higher levels of life satisfaction (175), and improved health and wellbeing (13, 46, 54). Sub-optimal levels of participation in daily activities can lead to long-term negative health sequelae (175) including: social isolation (39); depression or anxiety (150); physical or cognitive decline (13); and may ultimately lead to an increased health service burden (13).

The determinants of participation are not yet fully understood. There is evidence indicating that participation in physical activities is linked to the physical and cognitive capacity to perform those activities. One longitudinal study (12) identified ageing was associated with a decline in functional and cognitive abilities which in turn negatively impacted on participation (12). Additionally, emotional problems have been suggested as limiting one's participation in daily activities (150). However, a descriptive cross-sectional investigation of 200 older adults living in the community was able to identify determinants of physical capacity (e.g. leg strength, timed walking test, balance) and noted that it was difficult to predict physical activity participation due to the complexity of participation (176).

A factor complicating this picture is that participation has previously been explored as separate components (e.g. social, physical, mental participation) in different studies. For example, studies have examined social participation (177); participation in activities of daily living (bathing, dressing, walking and transferring) (13); physical activity/exercise (178); and leisure (179). It is possible that factors associated with some forms of participation (e.g. leisure) will not be consistent with factors associated with other forms of participation (e.g. self-care). Further research is required to determine if this is the case.

To address these deficiencies in the evidence base, this study aims to investigate potential factors that impact upon participation of older adults living in the community with specific consideration of demographic, physical health, and mental health variables. The study applies the broadest definition of participation which includes engagement in life situations identified through the duration and

frequency in performance of daily activities. With an increased understanding of the factors that can impact participation, health professionals may be able to target these areas with interventions to improve health outcomes.

4.2.3 Methods

Design

A cross-sectional design was used to investigate the demographic, physical and psychological determinants of participation in activities, in a typical sample of older adults, residing in Victoria, Australia (n=244). The study was the second phase of a cohort study which 12 months earlier had recruited a random selection (n=394) of community dwelling older adults who consented to be re-contacted the following year for further research (n=368) (24). Details of this study have been previously reported (24).

Participants

The original sample of households (parent cohort study) was randomly selected from the Victorian 2006 electronic residential telephone listings following 13,614 contacts of which 554 people agreed to be contacted by researchers. The parent cohort study investigated people's attitudes towards participation in falls prevention strategies (24). Consenting participants from this original database (n=368), were accessed as a convenience sample for recruitment to the current cross-sectional study for telephone interview. People were 70 years or older and living in their own homes. Inclusion criteria required that participants had; 1) sufficient English language skills to participate in an oral interview over the phone determined by the participant, 2) no significant cognitive impairment and 3) consented to take part in the study. Cognitive ability was ascertained on the '6 Item Cognitive Impairment Test' where a score of 13 or more (range of 0-28) indicated significant cognitive impairment (180). The study was approved by the Monash University Human Research Ethics Committee.

Data collection

The data collection was completed via telephone interviews. Following initial phone contact to gain consent for involvement, an interview time was booked for a researcher to call. An information package was sent to the individuals containing a selection of answering codes and photos/diagrams pertaining to

specific interview sections. Each individual was called at the agreed appointment time (usually within one week of initial contact) and the interview took place. Providing the participant met the minimum study inclusion requirements for cognition, the participant was formally recruited to the study and the interview was then completed. The option of completing the interview over two time periods was given to the participant, due to possible participant fatigue.

Seven investigators carried out the interviews over a six week period, following an individual training session from the project manager. Six of the interviewers were health professionals, with one person from the hospitality service industry. The interviews took between 40 and 70 minutes to complete, depending on the length of responses provided by the participants. Data was entered directly into Survey Monkey® at the time of the interview by the investigator.

Measurement tools

The interview consisted of a number of questions and instruments including demographics, health status indicators and current level of participation within specified activities. Demographic data encompassed; age, gender, living situation, any hospital admissions over the past 12 months (nights in hospital recorded), any falls experienced over the past 12 months (number recorded), as well as other health factors further elucidated in Table 4.1. Health status indicators gathered current health diagnoses and self-perceived physical as well as mental health functioning.

Table 4.1: Description of explanatory (independent) variables used for analysis.

Demographic variables	Physical health variables	Mental health variables
Age	Presence of a diagnosed health condition*	Self-perceived presence of depression (yes or no)
Gender	Meal preparation (level of independence 1-3, can do – cannot do)	Mental health component score (MCS) - measured on the Short Form-12 v2
Living situation (alone or with others and who)	Shopping (level of independence 1-3, can do - cannot do)	Depression screen - measured on the Geriatric Depression Scale
Falls in past 12 months identified**	Physical health component score (PCS) -measured on the Short Form-12 v2	
Nights in hospital due to fall past 12 months		
Nights in hospital past 12 month other reasons		
Emergency Department visit last 12 months		
Ambulance called last 12 months		
General Practitioner visit due to falls last 12 months		

* Health conditions detailed in Table 3 results

** Falls defined as “an event resulting in a person coming to rest inadvertently on the ground, floor or other lower level” (181)

Data on the level of participation (the outcome variable) in *Household and Recreation* subscales was obtained from the *Phone-FITT* interview (1). The *Phone-FITT* is a telephone interview tool which measures “physical activity” and used in this study to describe levels of participation with a temporal component. It has been demonstrated to have high levels of test-retest reliability for the Household subscale (intra-class correlation [ICC]: 0.84 (95%CI: 0.73, 0.91) and Recreation

subscale [ICC: 0.88 (95%CI: 0.80, 0.94)] (1). Evidence of validity was reported for use with older adults and was consistent with other measures of “physical activity” (1).

There are six items in the Household subscale and 11 in the Recreation subscale. Household included; light housework, making meals, shopping, heavy housework, home maintenance and caring for others. Recreation included; lifting heavy weights to strengthen legs, exercises to strengthen legs, lifting weights to strengthen arms, home exercises, walking, dancing, swimming, bicycling, golf, gardening and “other physical activities”. Items such as leg and arm strengthening exercises are included in the *Phone-FITT* interview. However, as these are specific components of an overall activity (that is strengthening exercises are to assist with being strong enough to carry out an activity, but do not refer to a specific activity e.g. shopping) they were not individually presented in this paper.

To gain an overall participation score, the participant reports the *frequency* (number of times per week the activity is performed) and *duration* (response of one to four time categories, 1= 1-15 minutes, 2=16-30 minutes, 3=31-60 minutes and 4=one hour or more) for each of the items as performed in a typical week last month. Frequency and duration scores for each item are then summed to generate an individual participation score for each of the *Phone-FITT* Household and Recreation subscales. The overall score has no absolute value, but can be used over time to indicate a change in participation levels. A zero score indicates a sedentary response or no participation (1).

Two instruments were selected to measure physical and psychosocial determinants in this study; the *Short Form-12 version 2 (SF-12 v2)* (145) and the *Short Geriatric Depression Scale (GDS15)* (146). The SF-12 v2 investigates 12 domains of physical/mental function and health in a self-rating tool captured on a fixed scale of either one to three or one to five. This includes questions around; physical function and limitations, pain, emotional health, mood, vitality, mental health and socialisation. The 12 domains are then collated into two subscales known as “component summary scores” and are ordered under the headings of; *physical health component score (PCS)* and *mental health component score (MCS)*. The SF-12 v2 provides an indication of functioning against normative data,

but is not a diagnostic tool. Reliability and validity evidence of the SF-12v2 is reported for use with people over 65 years and has been documented in a number of studies involving physical and mental functioning (145, 149).

The GDS15 consists of 15 questions that require a “yes or no” answer to screen for depressive symptoms. An example of the questions is; are you basically satisfied with your life? When one of the prescribed bolded answers is recorded, a point is scored and then summed with a total score of 0 - 4 indicating no depression, 5-10 suggesting mild depression and ≥ 11 suggesting severe depression. Reliability and validity evidence of the GDS15 measuring the possible existence of depression, with older adults was reported in a recent meta-analysis (152).

Statistical analysis:

Statistical analysis was completed using STATA version 11.2 (155). Descriptive statistics were used to profile participation levels of the sample (Table 4.2). Univariate linear regression models were first calculated to determine associations between participation (outcome variable) and each explanatory variable as listed in Table 4.1. Individual variables that reached statistical significance ($p \leq 0.05$) were entered into a multiple regression model to identify independent determinants of participation, e.g. those that remained statistically significant after adjustment of other important determinants (p -value of ≤ 0.05).

The individual influence of each determinant was ascertained through a backward stepwise regression to confirm a parsimonious model. This was done through removing the variable with the highest p -value from the model, which was repeated until all remaining variables were ≤ 0.05 . Two models were calculated separately; one model for identifying the determinants of Household participation and the second for Recreation participation. The total scores of the respective subscales were the outcome variable in each model. A p -value of .05 was used for variable entry or removal into the multiple regression models.

To examine model fit for observed data the explained variance (R^2) was calculated, where the higher the percentage indicated better fit of the model to the observed data relating to participation (182). The assumptions for the analyses followed the principles of linear regression where associations are approximately linear, the prediction error is unrelated to prediction value, there is normal distribution of the residuals above the fitted line, and that the residuals are

independent of each other. Assumptions were assessed by plotting normal probability and standardised residuals versus predicted values.

Table 4.2: Duration of participation in specified activities.

Activity* (Phone-FITT)	Duration (% of n=244)					Mean (SD)
	Not performed	1 = 1-15 mins	2 = 16-30 mins	3 = 31-60 mins	4 > one hour	
Light housework**	7.38	7.37	27.46	27.05	30.74	2.66 (1.20)
Meals preparation**	1.64	11.89	25.00	40.57	20.90	2.67 (0.99)
Shopping**	2.05	2.46	8.61	13.52	73.36	3.54 (0.90)
Heavy housework**	33.20	16.39	18.85	11.89	19.67	1.68 (1.52)
Home maintenance**	59.84	2.86	6.15	8.61	22.54	1.31 (1.72)
Caring for others**	90.57	4.92	0.41	0.82	3.28	0.21 (0.79)
Walking†	33.20	5.32	29.10	21.72	10.66	1.71 (1.40)
Dancing†	96.31	0.41	1.23	0	2.05	0.11 (0.61)
Swimming†	92.21	0.82	0.82	2.46	3.69	0.25 (0.89)
Biking†	90.57	2.87	3.69	2.46	0.41	0.19 (0.65)
Golf†	94.26	0	0	0	5.74	0.23 (0.93)
Gardening†	25.41	4.92	22.54	20.49	26.64	2.18 (1.52)

* Activity is defined as all activities performed in a day including; activities of daily living, work (paid, voluntary, education), active and passive leisure including social participation (5).

** Household subscale

† Recreation subscale

Diagnostics for collinearity among explanatory variables was completed using *pair-wise correlations* and *variance inflationary factors* (VIF) (183). Normal distribution of data was tested using the Shapiro-Wilk test (184). If data did not reach normality the "ladder of powers" (STATA) was applied to determine and complete the appropriate transformation of the variables to achieve distribution normality for analysis (185).

4.2.4 Results

Participants

From the potential 368 participants, 105 declined to participate, 18 people were excluded based on the cognitive screen, one withdrew partway through the study and 244 completed the interview (66%). Participants' age ranged from 70 – 91 years (mean 77.5, [SD 5.7]) with gender distribution of female 60%. Living

situation was described as 49% lived alone, 43% with a partner or spouse, and the remainder with another family member. Thirty-eight percent of participants reported having between one and 12 falls in the previous 12 month period, with eight participants reporting a hospitalisation for a fall in the previous year (between one and 14 nights hospital stay duration) and 24% were admitted for other reasons (details not obtained).

Participation

The most frequently performed Household activities over a typical week were; light housework (93%), meal preparation (98%) and shopping (98%), with 33% of respondents not engaging in heavy household tasks. The most frequent Recreation activities were gardening (75%) and walking (67%). The frequency of activities performed varied greatly depending on what the activity was with the most common ones displayed in Figure 4.1. All people participated in some form of household activities whereas approximately 13% of people did not participate in any recreational activities. Participation levels reported in Household; [mean (SD)] female: 36.50 (12.7), male: 35.63 (15.8), and Recreation; female: 16.03 (10.7) male: 17.6 (12.4) [0 indicates no participation]. Eight percent of the total sample (n=18) exhibited a degree of depression scoring five or more on the GDS15.

Residual testing for normality, homogeneity, linearity and influence found that the variables fitted within the 95% y-line (-2, 2) and had normal distribution for Household participation but not for Recreation. A square root transformation was performed to create normality of the Recreation participation data for analysis. The test for homogeneity (both subscales) showed reasonable distribution on the scatter plot and the testing for linearity revealed no outliers confirming the use of these models and the assumptions to be true.

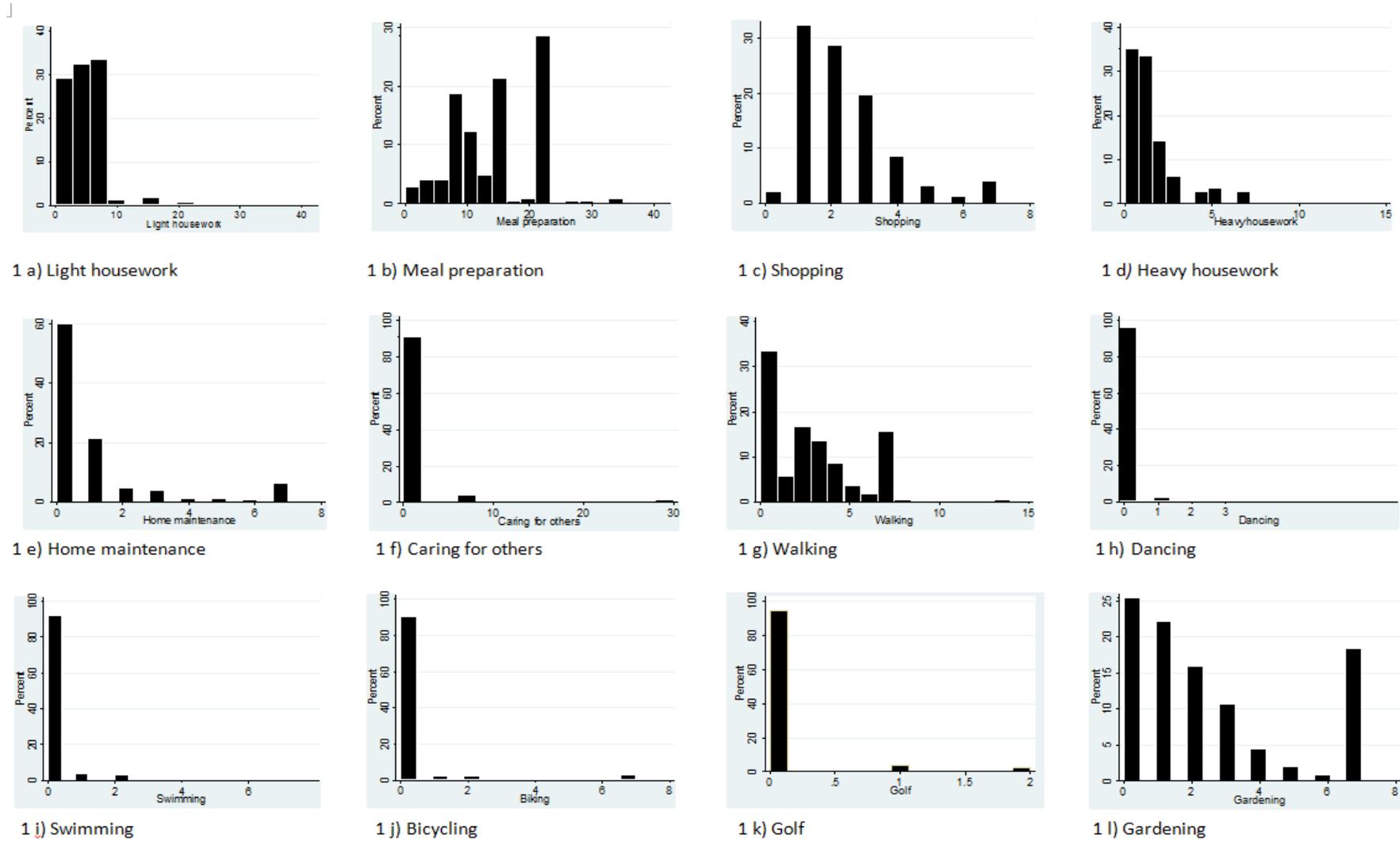


Figure 4.1: Frequency of participation in each activity (times in a typical week).

Univariate regression analysis identified five variables that were significantly associated with Household participation. A higher level of participation was associated with: a lower age ($p=.024$); and a higher number of falls experienced in the last 12 months ($p<.001$). Restricted participation was associated with: more assistance required with meal preparation ($p=.012$); more assistance required with shopping ($p=.043$); and a higher level of depression ($p=.003$). Analysis of the Recreation subscale data identified three variables that were associated. A higher level of participation was associated with: those living with others ($p=.012$); a higher physical health component score ($p=.003$) and restricted participation was associated with a higher level of depression score ($p<.001$) (Table 4.3). No significant multi-collinearity between the explanatory variables was identified.

Table 4.3: Results for regression of participation (Household/Recreation with explanatory variables).

Explanatory variables	Household Phone-FITT			Recreation Phone-FITT (sqrt)		
	Coefficient (95% CI)	p-value		Coefficient (95% CI)	p-value	
Age	-0.35 (-0.66, -0.05)	.024*		-0.03 (-0.07, 0.00)	.070	
Gender	-0.87 (-4.47, 2.74)	.636		0.19 (-0.21, 0.60)	.350	
Congestive Heart Failure	-5.73 (-15.09, 3.59)	.227		-1.02 (-2.07, 0.03)	.056	
Heart disease - other	0.88 (-3.01, 4.77)	.657		0.19 (-0.24, 0.63)	.379	
Stroke	-1.82 (-8.41, 4.76)	.586		-0.28 (-1.02, 0.46)	.453	
Cancer	-0.36 (-4.54, 3.82)	.864		-0.25 (-0.72, 0.22)	.300	
Osteoporosis	2.56 (-1.66, 6.77)	.233		-0.04 (-0.52, 0.43)	.863	
Depression	1.95 (-2.97, 6.87)	.436		-0.45 (-1.10, 0.10)	.110	
Arthritis	0.69 (-2.90, 4.28)	.705		0.22 (-0.19, 0.62)	.290	
Diabetes	1.38 (-3.35, 6.12)	.565		-0.12 (-0.65, 0.41)	.652	
Lung disease	-2.07 (-6.93, 2.79)	.403		-0.26 (-0.81, 0.28)	.345	
Parkinson's Disease	-0.02 (-0.31, 0.27)	.889		0.02 (-0.02, 0.05)	.314	
Inner ear issues	-0.11 (-5.49, 5.27)	.969		-0.23 (-0.83, 0.37)	.452	
Cataracts	-1.07 (-5.32, 3.18)	.620		-0.26 (-0.74, 0.22)	.282	
Visual impairment	0.65 (-3.36, 4.66)	.750		-0.25 (-0.70, 0.20)	.283	
Joint replacement	-0.65 (-5.20, 3.90)	.779		0.18 (-0.33, 0.69)	.494	
Broken bone (<12 months)	1.20 (-3.24, 5.64)	.594		-0.13 (-0.63, 0.37)	.600	
New health condition in last 12 months	-1.64 (-5.78, 2.50)	.437		-0.35 (-0.81, 0.12)	.143	
Living situation	1.96 (-0.77, 4.70)	.159		0.39 (0.09, 0.70)	.012*	
Meal preparation - without assistance	-5.86 (-10.39, -1.32)	.012*		0.04 (-0.48, 0.55)	.893	
Shopping - without assistance	-4.00 (-7.89, -0.12)	.043*		-0.05 (-0.49, 0.39)	.814	
Falls past 12 months	3.12 (1.84, 4.59)	<.001*		0.04 (-0.12, 0.20)	.626	
Nights in hospital due to fall - past 12 months	0.18 (-1.03, 1.38)	.772		0.06 (-0.08, 0.20)	.408	
Admitted for other reasons - past 12 months	-1.10 (-5.20, 3.00)	.598		-0.44 (-0.90, 0.02)	.059	
Emergency Department visit - past 12 months	-5.05 (-11.23, 1.12)	.108		0.12 (-0.58, 0.82)	.736	
Ambulance called - past 12 months	0.34 (-27.30, 27.99)	.980		1.14 (-1.97, 4.24)	.472	
GP visit due to fall - past 12 months	1.64 (-2.16, 5.43)	.396		0.04 (-0.39, 0.46)	.867	
Physical health component (PCS): SF-12 v2**	0.08 (-0.13, 0.30)	.448		0.04 (0.01, 0.06)	.003*	
Mental health component (MCS): SF-12 v2**	0.18 (-0.07, 0.42)	.157		0.02 (0.00, 0.05)	.078	
Depression: GDS15†	-1.37 (-2.26, -0.48)	.003*		-0.27 (-0.37, -0.18)	<.001*	

* Statistically significant result (<.05)

** Short Form-12 version 2®

† Short Geriatric Depression Scale

Multiple regression using a backward stepwise selection of the significant determinants revealed two factors that were significantly associated with Household participation and one with Recreation. For Household; restricted participation was associated with a higher level of depression [regression coefficient (95% CI), p-value: -1.57 (-2.42, -0.72) $p < .001$] and a higher participation level with a higher number of falls over the previous 12 months [3.43 (2.06, 4.80) $p < .001$]. For Recreation; restricted participation was associated with higher depressive symptoms as measured on the GDS15 [-0.27 (-0.37, -0.18) $p < .001$]. These results accounted for 13% of the variance (R^2) for the Household participation variable and 12% (R^2) of the variance for the Recreation participation variable.

4.2.5 Discussion

This study identified that older adults with higher levels of depression had lower levels of participation in household and recreation activities while older adults who had fallen over during the past 12 months reported higher levels of participation in household activities. The depression finding may be consistent with results from a population-based prospective cohort study of older adults ($n = 2,578$) in America where an increase in depression was found to be related to functional decline (186). A 12-year longitudinal study ($n=710$) of depression and functional capacity in community dwelling older adults in Japan also suggested that depression was a reliable predictor of functional decline (187), however the outcomes used in these studies reflected physical capacity rather than overall participation. If one assumes there is a causal link between physical capacity and participation, then the results are consistent with these studies. Similarly, a link between depression and level of activity is often seen in clinical settings (150, 188), although there is not sufficient empirical evidence to identify the order of causality (e.g. whether higher levels of depression cause lower levels of participation or vice versa).

The direction of the association between recent falls and participation in household activities was counter-intuitive. Previous research has demonstrated that falling can precipitate the development of a fear of falling which can lead to avoidance of participation in activities (30, 32). However, the finding of this study would indicate that the opposite may be true. Fear of falling was not measured,

so only speculation can be made on the role that this potential mediating factor may have played. It is also possible that if older adults are more active within their day, then they have a greater opportunity to fall (189). The increased risk of falling is likely to reflect the additional exposure to environmental risk factors (189); however that study was based in the residential care setting and therefore may not be applicable to community settings. The reason why this determinant was associated with household activities and not recreation activities was not clear and requires further investigation.

Another possible explanation for the reported positive correlation of falls and the participation level in household activities, is that participants exhibited "vigorous activity" and therefore had an increased risk of falling (190). The recent cross-sectional study on physical activity and falls in community-dwelling older adults (n=506) in Portugal identified that being *sufficiently active* reduces both falls and related injuries (190). These authors defined being sufficiently active as participating in exercise or activities that include a sufficient challenge to balance that enables an effective prevention of falls (95). Shopping and walking were the most popular activities in this study, but may not stimulate the required challenge to balance in order to prevent falls but this could depend on the environment and performance method (this was not recorded). For example rocky terrain or Nordic walking would present a challenge to balance as would intense digging and planting. It is important to note that shopping was included in the measure of Household participation and may therefore influence the study results as people access the community to shop with the concurrent potential to fall in the different environment. Another factor may be the "person-environment fit" of the person to hazards and barriers in the community, rather than solely the environmental barriers in their home (e.g. narrow aisles in a shop when using a walking frame) (180).

Six of the 12 questions in the SF-12 v2 explored the impact of emotional and mental health on participation both inside and outside the home, incorporating involvement in socialisation activities. It was surprising that the additional psychosocial determinants as measured by the Mental Health Component Score (MCS) of this scale were not significantly associated with participation as research indicates that emotional status can restrict involvement in life situations (191). This may be a reflection on the items identified in the SF-12v2 that measured

emotional status but may not have been specific enough when looking at participation. Another potential reason for this finding is that the GDS15 consists of 15 items that screen for depression whereas the MCS mainly addressed emotional impact and socialisation issues with only one question on depression. This may suggest that a scale with increased sensitivity is required for screening of depressive symptoms, rather than using general quality of life measures which are measuring mental health more broadly.

The explained variation for the models of Household and Recreation participation obtained in the current study suggest a moderate fit. While depression explains a degree of the variance in both participation subscales, other determinants not measured in this study may account for the remaining unexplained variation. It is possible that the degree to which people want to perform the household and recreation activities measured may be directly related to levels of participation in these activities. This should be the focus of future research.

No demographic factors were identified as being statistically significant determinants of participation, however in the univariate regression models living status was identified to have a significant association with participation for Recreation activities. This suggests that living situation may be confounded by one of the other variables. Almost half of the participants lived alone with participation scores (mean [SD]) for Household; 33.7 (10.7) and Recreation 3.9 (1.6) compared with those living with others; Household 38.5 (16.3) Recreation 4.1 (1.5).

Documentation of any services received was not recorded, which may have impacted on participation levels by either supporting the person to participate or through taking over the activity negating the need to perform it.

The results from this study highlight the need to consider screening for depression when working with older people to identify and address potential depressive symptoms which may hinder participation in life activities. However, it is unknown whether depression causes decreased participation or whether the lack of participation in activities causes depression. Furthermore, it could also be that a circular relationship exists between the two variables where they both contribute to each other. However studies have identified that participating in activities that are valued by the participant is a protective factor for mental health (150) and are therefore important to consider within intervention programmes (192).

Limitations and future research

There were a number of limitations identified within this study. Recruitment was a convenience sample from a previously random selection for a cohort study with participants that agreed to take part in research regarding falls. This may have biased the sample to those who had an interest or motivation to be involved in the project. The numbers of participants reduced from study one to this cross-sectional study with no specific reasons collected as to why.

The criterion for speaking English over the phone may have contributed to bias as it was not possible to include people with English as a second language, the very deaf, or those unable to endure conversing on the telephone for up to an hour due to resource limitations.

Another potential limitation with the falls result relates to the question for recording falls over the past 12 months. This required a retrospective self-report from each participant and may have been impeded by recall bias requiring accurate memory of all incidences of falls over the previous 12 months.

Participation in activities that hold a degree of meaning to the individual is an additional area that has been attributed to health and wellbeing in older adults (39, 174). However, the topic of meaningful activities was not explicitly addressed within this study as the information gathered regarding activities was determined by the tool used. The pre-selected activities chosen for inclusion in the *Phone-FITT* tool (1) were chiefly derived from previous research relating to the intensity of physical involvement required. This may have limited the data gathered regarding the extent of participation in meaningful activities that people did perform and needs to be further investigated.

Future research is required to examine the barriers and enablers for returning to or improving participation and investigating the impact of volition with the aim of improving overall health and wellbeing in this population. Research is also required to ascertain if participation in activities with other populations (e.g. post-discharge) varies from this community-dwelling sample of people in order to discover what effective strategies increase participation in other vulnerable populations.

4.2.6 Conclusion

This cross-sectional study with older adults demonstrated that an association exists between depression and the level of participation in daily activities. The types of activities in which people participate vary and must be taken into consideration when providing health-care interventions aimed at increasing participation. The findings indicate that health professionals need to screen for depression when addressing levels of participation with this population.

4.3 Summary of chapter four

This chapter has presented study 2 which explored the factors that impact on participation in household and recreation activities amongst community-dwelling older adults. The findings demonstrated that depression was negatively correlated with levels of participation in both types of activities, and falls were positively correlated with household participation only. This indicates a need for health professionals to consider depression and history of falls when planning rehabilitation programmes and interventions when focussing on increasing participation.

These results lead to additional queries to understand why participants engage in certain activities, how volition is involved with this choice of what they participate in, what is the link of volition with participation, and how this could be measured? The Volition Scale was then developed for this part of the project with an aim to answer some of these questions. To enable a scale to be used within clinical practice, the scale needs to be reliable and valid. Therefore, the following study explored the validity of the newly created scale.

5 Construct validity of the Volition Scale

Study 3:

Examining construct validity of the Volition Scale using the Rasch measurement model.

Authors: Pritchard, E., Brown, T., Barker, A., & Haines, T.

Submitted to *Archives of Physical Medicine and Rehabilitation* (Appendix 5.1).

5.1 Précis

Chapter four presented the second study findings that examined the determinants of participation in community-dwelling older adults. This identified important considerations for health professionals of the need to screen for depressive symptoms, and consider falls history with older adults when addressing participation levels. The initial literature review identified that *volition* (the thinking process that translates intention into action (4)) could potentially be an additional modifying factor of participation that few researchers have explored with older adults. This presented the next important construct that needed further investigation.

The literature review regarding volition (discussed in chapter two) summarised the currently available instruments for measuring volition in conjunction with their strengths and limitations. This exposed the lack of a brief volition screening scale that could be utilised over the phone or in a one-off session with participants. To address this deficiency, the Volition Scale (VoS) was developed and administered over the next three studies. This was based on the Occupational Questionnaire (125) but removed the first question (the activity log) as this was not possible to be completed over the phone. For clinical measures to be useful, it is important that they exhibit strong psychometric properties. As the VoS was a newly developed measure (within this thesis), it required examination of psychometric properties (reliability and validity) to determine that it was an appropriate scale to measure volition with older adults. The VoS was an adaption of a previously reliable and valid tool that was based on evidenced theoretical concepts, therefore it was decided that the internal construct validity would be targeted. This led to question three which stated - Do personal causation, values, and interests measure volition amongst older adults ≥ 70 years? This influenced the design of study 2 (presented in this chapter), which investigated the internal construct validity of the VoS as a brief screening scale. The results reported that the three- item scale measured the construct of volition.

PART B: Declaration for Thesis Chapter five

Monash University

Declaration by candidate

In the case of Chapter five, the nature and extent of my contribution to the work was the following:

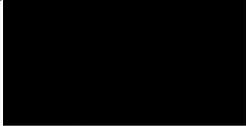
Examining the construct validity of the Volition Scale (VoS) with community dwelling older adults using the Rasch Measurement Model.	Extent of contribution (%)
Nature of contribution	
Data gathering	50%
Extraction of data from the database	100%
Calculation of data analysis	80%
Cross-checking data analyses	70%
Write up of manuscript	100%
Submission of manuscript to journal	100%
Subsequent revisions to manuscript as required by journal	80%
Primary author – Elizabeth Pritchard	80%

The following co-authors contributed to the work. Co-authors who are students at Monash University must also indicate the extent of their contribution in percentage terms:

Name	Nature of contribution	Extent of contribution (%) for student co-authors only
Ted Brown – Associate supervisor	Guidance provided for data analyses Cross checking of data analyses Editing of draft of manuscript Intellectual input to the study Guidance provided for subsequent revisions required by the journal	
Anna Barker Associate supervisor	Editing of draft of manuscript Intellectual input to the study Guidance provided for subsequent revisions required by the journal	
Terry Haines Primary	Intellectual input to the study Editing of the draft of manuscript	

supervisor	Cross checking of data analyses Guidance provided for subsequent revisions required by the journal	
-------------------	---	--

Candidate's Signature



Date 15/5/14

Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s) Allred Health Research Unit - Kingston Centre

[Please note that the location(s) must be institutional in nature, and should be indicated here as a department, centre or institute, with specific campus identification where relevant.]

Signature 1



Date 15-2-14

Signature 2

Signature 3

5.2 Published article 3

5.2.1 Abstract

Objective: To examine internal construct validity of the newly developed Volition Scale (VoS).

Design: Secondary analysis of data collected from a cross-sectional study.

Setting: Community-dwelling.

Participants: Older adults (≥ 70 years) selected through random digit-dialling from the Victoria (Australia) 2006 residential telephone records ($n=244$). Response rate was 244/368 (66 %). Data were collected through a telephone interview regarding the level of volition for participation in specified activities.

Interventions: None

Main outcome measures: Rasch Measurement Modelling was performed to evaluate four psychometric properties of the VoS. 1) Dimensionality or fit (extent to which the three-items measure the construct), 2) differential item functioning (difficulty of the items), 3) hierarchical ordering (items *most to least* difficult to affirm), and 4) rating scale functioning (fit of scoring structure to model expectations).

Results: Construct validity displayed goodness-of-fit mean square (MNSQ) values within designated suitable ranges; *infit* 0.75 to 0.99, *outfit* 0.86 to 1.0. Mean item measure of 0.00 logits [SD:0.86], logit values ranged from -1.18 to 0.82, persons' ability score of mean -2.36 logits [SD:2.33], range of -7.65 to 3.47 (dimensionality). Constructs were not differentiated by gender or age. *Interest* was the most difficult item to perform with *values* the least. Rating scales ranged from (*infit*, *outfit* MNSQ) 0.69, 1.24 to 0.68, 0.08. Rasch generated reliability indices for *persons* 0.57 and *items* 1.0.

Conclusions: Rasch analysis established validity of the Volition Scale. This displayed unidimensionality, is consistent across age and gender, and identified a range of difficulty across the items with an adequate scoring structure to measure volition.

Keywords:

Activities of daily living; validity and reliability; elderly; participation; volition.

5.2.2 Introduction

Volition is described as the thinking process that drives intention (motivation) into action (4, 7). Three components of volition are hypothesised as being essential to support these thinking processes and enable participation in activities (7). 1) *personal causation* identified as self-belief that one has the skills required for participation and can be successful (or self-efficacy) (102); 2) *values* of what it is the individual finds important; and 3) *interests* that one has within the activity to find it pleasurable or enjoyable. Volition incorporates the attributes of meaning and preferences that are attributed to choosing an activity to participate in (7, 103), however is an under-reported psychological determinant of participation in activities (4).

Studies of volition have occurred in several research fields including health, education and organisational psychology (131, 133). A recent cross-sectional study amongst community-dwelling older adults identified that higher levels of volition was significantly associated with higher levels of participation in specified household and recreation activities (193). A longitudinal study explored the relationship between longstanding activities, life satisfaction, and successful aging with older adults (39). Results identified that matched activities to personally held values, which contained meaning for the older adults (60 – 91 years, n=292) were associated with successful ageing ($p=.01$) (39). Higher levels of self-efficacy and volition have also been associated with higher social connectedness and life satisfaction in community-dwelling older adults (4, 39). These studies provide evidence of volition being linked with increased participation in activities.

Older adults have displayed varied responses and level of compliance (or adherence) to participation in rehabilitation activities following a health event (36, 93, 94). Higher levels of participation in daily activities have been associated with higher life satisfaction, mental health, physical functioning, and general health (54) as well as improved mental health and wellbeing, and successful aging (39). Conversely reduced participation can lead to recurring patterns of disease and potential hospital readmissions as resultant health concerns (36). Health intervention programs for older adults do not consistently address psychosocial health outcomes (e.g. anxiety, depression, self-efficacy, social connectedness) or

measure volition and this may adversely impact on the long-term sustainability of program outcomes (31, 104, 134).

Following a literature search of peer reviewed articles, it was identified that there were no valid brief volition screening scale available for use with older adults that could be administered in a single session or over the phone (remote administration). The Volition Scale (VoS) was developed as a brief screening scale to identify volition levels for activities in order to provide a choice of activities that hold higher volition for the individual, within rehabilitation programs. Inclusion of volition screening has the potential to increase long-term participation and positively impact health recovery as individuals are more likely to participate in rehabilitation interventions if they include activities that generate high levels of volition and meaning (increasing participation) (39).

The use of tests and measures that are valid and reliable is paramount for health professionals in applying evidenced-based practice and informed decision making (194). A valid tool needs to be sensitive, accurate, and not exhibit bias and establish content, criterion-related, and construct validity (194, 195). Scales need to exhibit sufficient scale width (high to low levels of the construct being examined) to enable utilisation across a range of clinical settings and populations, and internal consistency to examine whether items within the scale measure the same construct.

Rasch Measurement Modelling (RMM) (160) is an approach that can be used to examine the degree to which a scale has relevant internal construct validity (e.g. *dimensionality, hierarchical ordering and differential item functioning*). It is a mathematical model which does not assume that each item has the same value or replicates the same level of difficulty and produces a hierarchical scale of items (easier to hardest) identifying both *persons' ability* and *item difficulty* (163). This is based on the principle that how an individual responds to an item results from the interaction between the individual and the item difficulty. Rasch analysis indicates which items fit the model in order to establish the relationships between the items, the weight of these within the overall construct, and to ascertain if people respond in a consistent and logical manner.

The purpose of this paper was to examine the development and psychometric properties of the newly created three-item screening measure of volition (the VoS) with RMM.

Literature Review of Volition Scales

Five volition scales have previously been studied. First, The *Volitional Questionnaire* (121) assesses volition through systematic observation of a person's behaviour and how they react within the environment (110), with interpretation by the therapist. Direct observation requires time and face-to-face interaction which restricts the applicability of this scale as a brief screening tool.

Second, the Assessment of Occupational Functioning (125) is a scale that identifies the three constructs of volition (personal causation, values and interests) incorporated with the individual's roles, habits, and skills. This scale collects a vocational history through narrative responses from participants, interpreted by the therapist and takes around 30 minutes to administer (125). The time requirements for face-to-face administration and interpretation of results by the therapist result in restricted application of this scale for screening.

Third, the Model of Human Occupation Screening Tool (129) is a comprehensive volition scale that provides an understanding of the client's activity choices (with higher volition) to guide the development of person-centred treatment plans. Information can be gathered through observation, interviews, case notes and proxy reports (7). This scale requires extensive data collection from a variety of sources and is mainly applicable to the clinical setting, which negates it as a screening tool.

Fourth, the Volitional Component Questionnaire (131) is used in psychology to calculate differences in self-regulatory abilities to control own behaviours (190-item scale). This instrument lacks clinical utility for a brief volition screen due to its length. A shortened 36-item version is available and has been used with participants with psychiatric disorders, and in Human Kinetics regarding athlete recovery following injury (133). Neither is applicable to the broader context of older adults or as a brief screening tool.

The final scale identified is the Occupational Questionnaire (OQ) (125). A short four-question scale administered in discussion with the individual following

completion of a one day activities log in half-hourly increments. This scale incorporates personal causation, values and interest stating the following questions (7, 117):

- “1) I consider this activity to be: work, daily living work, recreation, rest;
- 2) I think I do this: very well, well, about average, poorly, very poorly;
- 3) For me this activity is: extremely important, important, take it or leave it, rather not do it, total waste of time;
- 4) How much do you enjoy this activity: like it very much, like it, neither like it nor dislike it, dislike it, strongly dislike it” (117).

A descriptive study using the OQ examined the relationships between the three volition items, patterns of activity, and life satisfaction of older adults (117). Results reported a correlation between life satisfaction and time spent participating in work/productivity ($p < .01$), recreation ($p = .05$) but not with daily living tasks ($p = .21$) (117). Few validity or reliability studies have been published using the OQ with older adults however, Smith et al (117) identified 77-81 per cent agreement for the volitional items over two studies (two weeks apart) indicating reasonable test-retest reliability (no coefficients reported). Two studies regarding particular diagnoses with younger adults have also used the OQ for 1) investigation of time use and perception of importance and enjoyment of activities with middle-age adults in treatment for obesity (136), and 2) examining predictors of occupational balance with adults and rheumatoid arthritis in adults under 65 years but without significant effect ($p=.07$) (137). The OQ was the only short validated volition screening scale identified however there are limitations for applicability as two contact points are expected with the individual and completion of the scale is required through face-to face discussion.

The literature review identified five instruments that measured volition in health research that required either direct observation, were time intensive due to the length, or required more than one session with the client. The OQ was the closest scale to provide a brief snapshot of an individual's level of volition. However this scale required adaptation and validation to enable it to be used in a brief one-off session (in person or over the phone) amongst older adults.

5.2.3 Methods

Design and data collection

This study utilised data gathered ensuing a 12 month follow-up of the parent study (24). Volition data were only collected at follow-up which formed the cross-sectional design. Two studies using this data have already been published (31, 193) however the psychometric properties of the VoS needed to be established.

Participants

The participants were older adults (≥ 70 years) residing in their own homes and initially recruited through random digit-dialling from the Victoria (Australia) 2006 residential telephone records. This parent study investigated older adults' perceptions towards a range of falls prevention activities (24). Three hundred and sixty-eight participants agreed to be contacted for the 12 month follow-up, with 244 consenting to participate in the cross-sectional study (response rate 66 %). Data collection included demographics, levels of participation in a selection of household/recreation activities, and volition scores using the VoS.

Inclusion criteria encompassed sufficient English language skills to converse over the phone (self-identified) and no significant cognitive impairment. Cognitive ability was assessed at the beginning of the interview using the "Short orientation-memory-concentration test" with scores ranging from 1 to 28 (154). A score of 12 or less indicated sufficient cognitive integrity to continue with the interview. Verbal consent to participate in the study was also gained.

Development of the Volition Scale (VoS)

The VoS was adapted from a previously validated measure, the OQ. Three changes were made including adjustment to the wording of the questions, rating scale, and deletion of the activity log pre-requirement, which created the VoS (Table 5.1). The rationale for these changes included; 1) the tool could not be administered in person (as per the OQ recommendations), 2) the answer schedule differed for each question which could lead to participant confusion, and 3) due to participant burden the individuals could not be requested to complete a daily activities log prior to the phone interviews. Expected benefits of developing the VoS included a uniformed answer schedule requiring consistent responses, shorter administration over the phone as it did not demand an activity

log to be presented, and retention of the integral principles of participation and volition that are accepted in the clinical field.

Participants were requested to identify the current activities they participated in then asked three questions reflecting the volition items (the VoS). Participant responses were recorded on a five point Likert rating scale (153) consisting of strongly agree (1), to strongly disagree (5). The VoS questions include:

1. I think I do this activity very well (personal causation)
2. For me, this activity is extremely important (values)
3. I enjoy this activity very much (interests).

Table 5.1: The Volition Scale.

Instructions for client	Personal causation	Values	Interest
"Can you tell me how much you agree with these next statements for each of the activities you identified?"	"I think I do this activity very well":	"For me, this activity is extremely important":	"I enjoy doing this activity very much":
This is scored on a scale of 1 to 5. 1 being 'strongly agree' and 5 being 'strongly disagree'.	1 - Strongly agree 2 - Agree 3 - Undecided 4 - Disagree 5 - Strongly disagree	1 - Strongly agree 2 - Agree 3 - Undecided 4 - Disagree 5 - Strongly disagree	1 - Strongly agree 2 - Agree 3 - Undecided 4 - Disagree 5 - Strongly disagree

Instrumentation

Older adults' participation in activities was determined using the *Phone-FITT* survey (1). This is a telephone interview tool that gathers data on activity performance for a "typical week last month". The scale asks if the individual participates in specified activities (yes or no) with six in the household sub-scale (e.g. housework/shopping) and 11 under recreation (e.g. swimming/ golf), with 17 possible activities. The *frequency* (number of times) and *duration* (minutes) that the activities were performed is also requested.

The overall score is determined through summation of the frequency and duration ($f+d$). Individual changes over time can be tracked as results are not an absolute

value (score of zero indicates no participation) (1). The *Phone-FITT* has reported criterion and construct validity with older adults [Coeff: 0.29 (95%CI: 0.01 to 0.53) to 0.57 (0.34 to 0.73)], -0.2 (-0.5 to 0.14) to -0.45 (-0.68 to -0.14) and test-retest reliability (seven days apart) [intra-class correlation: 0.77 (0.63 to 0.87)] (1).

Procedure

The study was approved by the Human Research Ethics Committee at Monash University. Data were collected through telephone interviews, taking between 12 to 18 minutes (as part of the larger study 40-70 minutes duration) and dependent on the responses given by the individuals. The participant self-nominated up to 17 activities they currently perform from the *Phone-FITT* format (1). This meant that these questions could be asked up to 17 times for each participant (once per activity). The VoS was then administered when participation in an activity was stated. Individual participants could score multiple measures of their volition which was activity not person dependent.

Analysis

RMM (160) was chosen as the appropriate method for identifying validity of the brief three-item VoS to examine the ordinal responses from the participants' volition scores. This would determine fit of the items (personal causation, values, and interests) to the one dominant construct of volition to identify if the tool exhibited sufficient internal construct validity for use in clinical practice.

Principles of the RMM include *dimensionality*, *hierarchical ordering* and *differential item functioning (DIF)* (163). *Dimensionality* is about examining the individual attributes and how well these fit the suggested model to ascertain if they measure one underlying construct. This is done within a hierarchical line of enquiry of *more than/less than* (163), is confirmed when the statistics fit within the acceptable range, and if most of the variance can be explained by the data (indicating unidimensionality). Fit statistics (*infit* and *outfit*) of the data to the model can be determined if each item matches the expectations of the model. Statistical values that are close to 1.0 are considered a good fit (163), which may fall within the range of mean square (MNSQ 0.6 to 1.4) and standardised mean scores (ZSTD range -2 to +2) providing evidence of construct reliability (163). Sample sizes provide robust confidence of analyses at around 500 data inputs (or responses) (164). If there are more than 1000 inputs, then the standardised mean (ZSTD) for

infit and *outfit* are not required to fall within this stated range due to the sensitivity and high statistical power of the calculation and the *infit* statistic is given more weighting (163, 196).

Hierarchical ordering of item difficulty is examined where the results identify the hierarchy in which people find the items *most to least* difficult to affirm. The fit statistics determine the logit value (log odds units) to provide a consistent value and meaning of the intervals within the scale (163). This has more relevance when there are multiple items within a test as they can then be arranged on the scale to reflect this level of difficulty so that participants can achieve the easiest ones first. However, the issue of hierarchy does not hold direct relevance for the VoS as there are only three items.

Differential item functioning (DIF) identifies if the constructs establish consistent difficulty of the items when used with different groups of people to determine item bias (163). DIF was explored across gender and two age ranges (70-76 and 77-91 years) to determine if these factors influenced the person's ability to complete the scale. An inherent bias may be present if the participants responded differently across the items. Use of scales with a known bias towards specific participant groups is not advisable for clinicians (e.g. scales used with ethnic minority groups or specific age groups only).

Data were analysed using the Winsteps® program (164). The Rasch generated reliability indices for *persons* and *item* reliability was reported on a scale of 0 to 1.0 (1.0=high).

5.2.4 Results

The age of the 244 participants ranged from 70 – 91 years (mean 77.5, [SD 5.7]) and 147 were female (60 %). All individuals identified at least two activities they participated in (range 2 to 13; median 6; IQR 3) with a potential maximum of 17 activities per person. Data collected from the participants generated 1646 sets of volition item scores.

Dimensionality

The RMM results for dimensionality are reported in Table 5.2. The mean square *infit* statistics ranged from 0.75 to 0.99 indicating that the three VoS items displayed fit with the Rasch model. The mean item measure was 0.00 logits [SD: 0.86] with a

range of logit values from -1.18 to 0.82. This indicates satisfactory hierarchical ordering of the three items with item separation at 16.93, and Rasch generated reliability indices of 1.0.

The item residuals were examined using factor analysis. The total amount of the variance explained by the RMM was 57 per cent. This suggests potentially no other significant latent factors existed in the item residuals and provided some evidence of the unidimensionality of the VoS.

Table 5.2: Results of Item statistics from Rasch Analysis (1646 entries).

Scale Items (in hierarchical order)	RMM Logit Item Measure	Logit Item Measure S. E.	Infit MNSQ	Infit ZSTD	Outfit MNSQ	Outfit ZSTD	PIMEA corr.
Values	0.82	0.06	0.94	-1.1	0.86	-2.3	0.68
Personal causation	0.37	0.05	0.99	-0.2	1.00	0.1	0.63
Interests	-1.18	0.04	0.75	-6.3	0.90	-1.7	0.81
Mean	0.00	0.05	0.89	-2.5	0.92	-1.3	
SD	0.86	0.01	0.10	2.7	0.06	1.0	
Separation	16.93						
Reliability	1.0						

S.E. = standard error, MNSQ = mean square, ZSTD = standardised mean, SD = standard deviation.

The persons' ability mean score was -2.36 logits [SD: 2.33] with results ranging from -7.65 to 3.47. Persons' ability separation was 1.14 with Rasch generated reliability indices reported as 0.57.

Differential item functioning (DIF)

No DIF was identified based on gender or age, indicating that the three VoS items did not differentiate between male/female respondents, or those of a certain age group. These were reported as personal causation (gender $p = 1.00$, age $p = .36$); values (.36, .11); and interests (.46, .35).

Hierarchical ordering

The hierarchical ordering of these three items does not provide useful clinical information for the VoS and is more beneficial for longer scales therefore it is not reported.

Rating scale categories of the VoS

The rating scale responses were reported as: 1 (strongly agree) (MNSQ *infit*, *outfit*) 1.24, 1.08; 2 (agree) 0.77, 0.92; 3 (undecided) 0.69, 0.68; 4 (disagree) 0.80, 0.82; 5 (strongly disagree) 1.02, 1.05. This indicates that the scoring structure fits the RMM expectations within the required ranges of 0.6 and 1.4. However, the summary of the category probability structure identified that the third rating scale “undecided” category on the Likert scale response was a weak fit as results were between 0 and .2 (Figure 5.1). This suggests a future revision of the rating scale may be required but did not affect validity of the results.

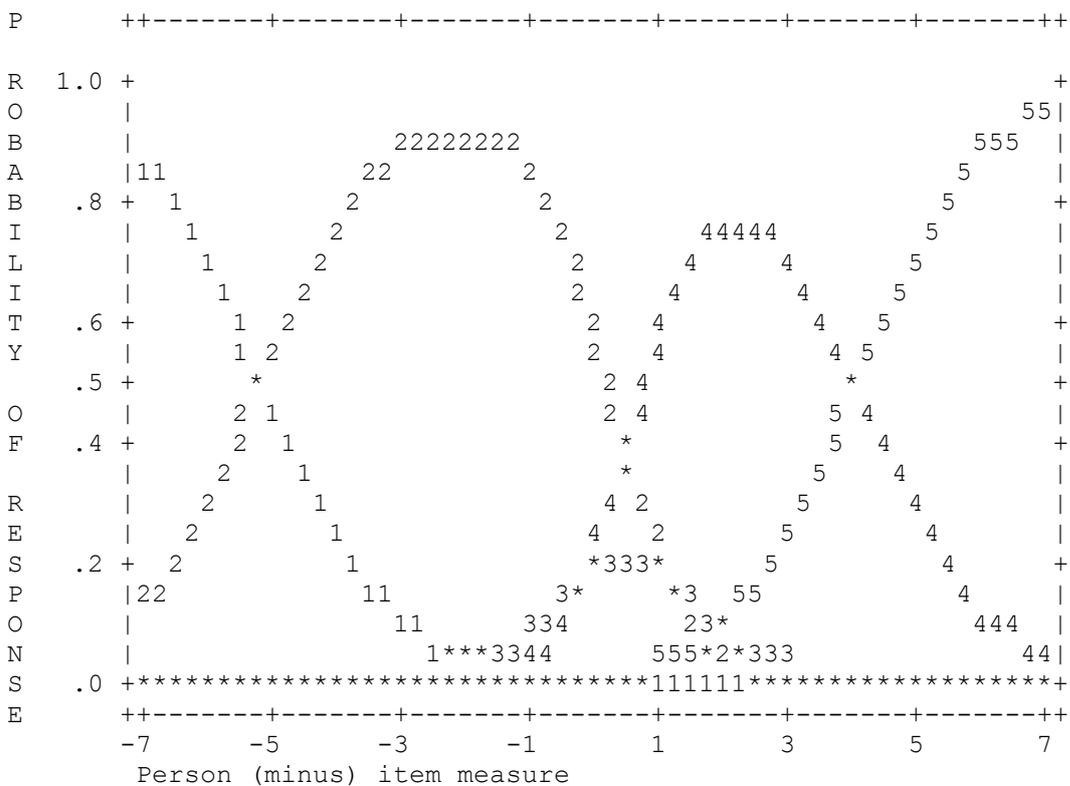


Figure 5.1: Summary of rating scale structure of the three volition item responses on the Likert rating scale (1 - strongly agree to 5 - strongly disagree).

Volition scores were calculated through summing the raw scores of each item for each activity. This translated into interval level logit scores presented as Rasch *adjusted logit* scores in Table 5.3. The table has been adjusted from original negative logits to begin at '0' for ease of application. The possible ranges of raw scores are from 3 to 15 with the higher adjusted logit score indicating lower levels of volition within the specific activity (range 0 to 14.16). This reflects the direction of

the Likert scale scoring from the original OQ scale where the lowest number (one) equates to the highest level of agreement and therefore highest level of volition. Analysis of the normative scores can be multiplied by -1 for ease of interpretation and has previously been published (193). For example [coefficient; 95% confidence interval -0.30 (-0.61, 0.01)] x -1 becomes [0.30 (-0.01, 0.61)] and interpreted as higher levels of participation is associated with higher levels of volition.

Table 5.3: Sample norms for volition.

Raw scores *	Rasch adjusted logit scores **	S.E.	Normed	S.E.	Frequency	%	Cum. Frequency	%	Percentile
3	0	1.99	273	86	120	7.3	120	7.3	4
4	1.7	1.33	346	57	108	6.6	228	13.9	11
5	3.31	1.28	415	55	190	11.5	418	25.4	20
6	5.42	1.53	505	66	663	40.3	1081	65.7	46
7	6.82	0.95	565	41	182	11.1	1263	76.7	71
8	7.60	0.84	599	36	253	15.4	1516	92.1	84
9	8.23	0.76	626	33	51	3.1	1567	95.2	94
10	8.77	0.72	649	31	46	2.8	1613	98.0	97
11	9.31	0.77	672	33	17	1.0	1630	99.0	99
12	10.02	0.94	703	40	12	0.7	1642	99.8	99
13	11.13	1.14	750	49	4	0.2	1646	100.0	99
14	12.57	1.28	812	55	0	0.0	1646	100.0	100
15	14.16	1.95	880	84	0	0.0	1646	100.0	100

* Summed scores from each of the three items, ** Adjusted scores calculated through individual logit scores (0 indicates highest level of volition), S.E. = standard error.

NB. When using Rasch scores for analysis, coefficients and 95% CI results can be multiplied by -1 for interpretation of the volition scale as high numbers = high volition.

5.2.5 Discussion

This study has demonstrated that the three-items work together to measure volition (unidimensionality) and can be used as a brief screening scale of volition in clinical practice. The Rasch reliability index was moderate however the VoS was found to fit the Rasch model including fit for unidimensionality (163) and presented the VoS as a more of a macro screening scale rather than a precise measurement tool due to the limited number of items. The VoS is presented as a reverse scale (lower number = higher volition levels) as determined through the design of the Likert scoring (based on the original OQ). This may cause confusion with correlation coefficient results as a negative correlation reflects an increase in

volition scores. However, reporting of data has previously been presented with a multiplication of the results (x-1) to account for this (193).

The VoS presents a valid screening method to determine general levels of volition for specific activities. It can be used over the phone with potential application in busy health practices with older adults. Utilisation may include being administered before and after clinical intervention in either practice or research and could potentially be utilised with older adults in aged care, acute/sub-acute, community rehabilitation or mental health settings. The short three-item general screen has consistent answering responses for quick administration benefitting both the client and the therapist. Using the VoS could direct the selection of appropriate activities for inclusion of those with higher levels of volition into prescribed interventions. The individual may then continue active participation in self-selected meaningful activities which can positively impact their overall health and wellbeing (39).

Study limitations

Limitations of the VoS include the brevity of the scale that reduces the complex construct of volition to three items. This could be seen as a limitation of the development of this scale however the items of personal causation, values and interests are based on a previously validated scale, prior evidence, and are currently accepted components of volition. Ideally the development of new instrumentation would include an extensive process from focus group discussion (exploration of the phenomenon) to selection and trial of a number of items that are likely to be associated with volition. However, it was deemed that this work was previously completed within the development of the OQ. The findings of this study confirm that the VoS is a quick, easy to use broad screening scale of volition that can be used by any health professional.

The participants in this study included English speaking older adults only, which identifies a potential language bias. It was age limited to those 70 years and over and may not be generalisable to younger participants until additional research has been implemented. It was administered to those who met the requirements of cognitive ability and therefore is not validated for use with people who have dementia or cognitive impairment.

Future Research Implications

The authors' recognise that due to the brevity of the VoS, the scale needs to be viewed as a pragmatic screening tool of three items of volition for use in busy clinical settings. A choice of activities that may increase participation (selecting those with higher volition) could be presented to the client, which has the potential of improving long-term health outcomes. However additional research is required to identify the impact of identified volition levels and activity selection amongst older adults.

The findings suggest that the third scoring response (undecided) could be revised in future studies as it presented a weak fit. This would create a four response Likert scale aiming to increase the response probability of the measure. The resulting benefits could be to establish a definite decision (of agreement or not) from each participant regarding the level of volition each activity holds, rather than providing the possibility of a neutral/undecided option. There is much debate regarding the recommended response numbers of the Likert rating scale which is largely unresolved (197, 198) with suggestions on the recommended number of responses for the scale ranging from two to 18 with continuing discourse (197, 198).

Further research and analysis of validity and reliability would be beneficial to determine if this tool can be utilised with diverse populations. Ongoing development of the VoS needs to include piloting, empirical scrutiny, identification of normative data, and additional comprehensive psychometrics for continued utility.

5.2.6 Conclusion

This study examined the development and construct validity of a brief volition screening scale, the Volition Scale (VoS) with Rasch Measurement Modelling (RMM). The VoS is a three item-scale that was adapted from the Occupational Questionnaire (117) with responses collected through telephone interviews with community-dwelling participants 70 years and over. The RMM results confirmed that the VoS demonstrated internal construct validity and can be used as a valid brief volition screen. The three VoS items of personal causation, values, and interests, provided an indication of the level of volition for participation in specified activities. Selection of activities with a higher level of volition can then be integrated into health rehabilitation programmes, which has the potential to

increase ongoing activity participation and lead to increased health and wellbeing amongst older adults.

5.3 Summary of chapter five

This chapter has documented the results of the Rasch analysis to determine the construct validity of the Volition Scale. The scale was developed to be used over the phone in a one-off session with older adults but could potentially be used with younger participants and face-to-face. The study demonstrated that personal causation, values, and interests do measure volition and provides validity for a scale that could be used in clinical practice. Further research is required to develop this into a full clinical assessment scale which identifies the ways in which therapists and individuals could classify the choice of activities and ways of scoring.

The next question is whether volition is associated with participation. This knowledge could potentially lead to increasing participation through presenting a choice of activities within rehabilitation programmes and allowing the participation to choose those that have higher levels of personal volition.

6 Associations between participation and volition

Study 4:

Exploring the association between volition and participation in daily life activities with older adults, living in the community.

Authors: Pritchard, E., Brown, T., Barker, A. & Haines, T.

Published in the *Clinical Rehabilitation* journal – Accepted March 2014
(Appendix 6.1).

6.1 Précis

The previous chapter identified the construct validity of the VoS as a measure of volition with older adults. This scale could now be used as a brief screening scale to ascertain levels of volition in relation to participation with older adults. Due to the paucity of evidence regarding the interaction of volition with participation, this led to the next question to be addressed in this thesis - what is the impact of volition on participation? This line of inquiry was developed into study 4 to determine if participation in daily activities was associated with volition in community-dwelling older adults.

The rationale for identifying the interaction of participation and volition in the subsequent study could lead to providing evidence that health practitioners need to consider the individual's choice of meaningful activities within health programmes. If volition is demonstrated to be an important determinant of participation then proposed programmes that involve activities "prescribed" for the individual would need to screen for volition and select activities that have higher levels for the client. That is, if an activity meets the three volition components of i) the individual believes they are capable of achieving the activity (personal causation); ii) the activity has meaning for the individual (values), and iii) the activity is of interest or holds satisfaction for the individual (interest); then the individual is more likely to pursue the activity and exhibit higher programme adherence. This in turn, would have a positive impact on the levels of participation, and wellbeing.

The study results supported this hypothesis and reported associations between participation and volition in light housework ($n=225$, $p = .008$); shopping ($n=239$, $p = .018$); lifting weights to strengthen legs ($n=23$, $p = .031$); walking for exercise ($n=163$, $p < .001$); and gardening ($n=183$, $p = .001$). These results have clinical implications for health professionals as discussed in the published manuscript and also revisited in the final chapter.

PART B: Declaration for Thesis Chapter six

Monash University

Declaration by candidate

In the case of Chapter six, the nature and extent of my contribution to the work was the following:

Exploring the association between volition and participation in daily life activities with older adults, living in the community.	Extent of contribution (%)
Nature of contribution	
Data gathering	50%
Extraction of data from the database	100%
Calculation of data analysis	80%
Cross-checking data analyses	70%
Write up of manuscript	100%
Submission of manuscript to journal	100%
Subsequent revisions to manuscript as required by journal	80%
Primary author – Elizabeth Pritchard	80%

The following co-authors contributed to the work. Co-authors who are students at Monash University must also indicate the extent of their contribution in percentage terms:

Name	Nature of contribution	Extent of contribution (%) for student co-authors only
Ted Brown – Associate supervisor	Guidance provided for data analyses Cross checking of data analyses Editing of draft of manuscript Intellectual input to the study Guidance provided for subsequent revisions required by the journal	
Anna Barker Associate supervisor	Editing of draft of manuscript Intellectual input to the study Guidance provided for subsequent revisions required by the journal	
Terry Haines Primary	Intellectual input to the study Guidance provided for data analyses	

supervisor	Cross checking of data analyses Editing of the draft of manuscript Cross checking of data analyses Guidance provided for subsequent revisions required by the journal	
-------------------	--	--

Candidate's Signature



Date 15/5/14

Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s) Allied Health Research Unit - Kingston Centre

[Please note that the location(s) must be institutional in nature, and should be indicated here as a department, centre or institute, with specific campus identification where relevant.]

Signature 1



Date 13-2-14

Signature 2

Signature 3

6.1.1 Abstract

Objective:

To explore the association between volition and participation in daily activities with older adults living in the community.

Design:

Cross-sectional study.

Setting:

Community-dwelling, residing in Victoria (Australia).

Participants:

Two-hundred and forty-four adults 70 years and older drawn from a convenience sample, living in their own homes.

Main measures:

Individuals' participation in daily activities was obtained via phone interviews, from the completion of the *Phone-FITT* survey. Levels of volition (identified under three items; personal causation, values and interests) were collected using the Volition Scale. Analyses were completed through linear regression.

Results:

The participants' mean age was 77.5 years (SD 5.7) with 60% being female. Higher levels of participation were associated with higher levels of volition in light housework ($n=225$, $p = .008$), shopping ($n=239$, $p = .018$), lifting weights to strengthen legs ($n=23$, $p = .031$), walking for exercise ($n=163$, $p < .001$) and gardening ($n=183$, $p = .001$).

Conclusions:

Increased volition is associated with increased participation in physical activities with community-dwelling older adults.

Clinical messages:

- Higher volition was associated with higher participation in: light housework, meal preparation, shopping, lifting weights to strengthen legs, walking and gardening with older adults.
- Volition may be an integral component to consider in the rehabilitation of older adults.

6.1.2 Introduction

Physical decline is a negative health outcome that concerns health professionals. An abundance of effective health intervention programmes to address physical decline has previously been investigated but with varying degrees of long-term success and generalisability (93, 94). Lack of adherence or compliance to health programmes following hospital discharge is an ongoing issue (93, 199). This may be due to lack of *volition* to continue with therapeutic interventions and requires further investigation (4, 92).

Volition or the motivation to engage in action has been posited as an essential component for individuals to carry out daily activities (e.g. household and leisure) (99). Volition is a mental process which translates the individual's level of motivation or intention, into action (4) and relates to how the desired action/outcome is achieved across contexts (7). Three components of volition are described as being essential to support the thinking processes of completing actions (7): i) *personal causation* or the degree in understanding self-ability (7), also known as *competence* (99) or *self-efficacy* (102, 103); ii) *values* or meaning of the activity to the individual (7) as people are more likely to engage in activities that are meaningful and align with personal values (10); and iii) level of *interest* a person has in the activity in order to perform it (7, 92).

These three components have formed an integral framework for understanding volition where intensity can individually vary across different activities (7, 99). If these factors are absent for people when choosing activities to perform, they are less likely to be engaged (104). Development of these self-regulatory strategies has been associated with increased physical performance (39, 112), improved adherence to health programmes (72, 113) and resulted in a positive impact on overall *participation* levels (in life activities) promoting successful ageing (99, 105, 109, 114).

Participation has been identified in the International Classification of Disability, Health and Function as "involvement in a life situation" (9). *Participation* in this paper uses a broader definition regarding engagement in daily life activities and incorporates the psychological aspects of thinking and volition as well as the psychosocial aspects of mental health (e.g. anxiety, depression, social connectedness) (5, 9).

Higher levels of participation have led to higher levels of health and wellbeing, for example in executive function (38), and satisfaction (200). However, this has not been investigated extensively (4, 59, 201). If older adults can maintain or improve their level of participation as they age, they are more likely to experience flourishing health and wellbeing and require fewer health interventions (55, 186). The link between meaningful activities and participation has been established (39) however the connections between volition and participation in older adults has not.

A commonly utilised health theory to explain the relationship between attitudes and behaviour, is the Theory of Planned Behaviour (202). This theory incorporates the intensity of one's attitude and the extent of 'perceived control' the individual has, which leads to the person's intention to perform a specific behaviour (203, 204). However, utilisation has been more readily applied to addictive behaviour changes and chronic disease (from an ill-health focus). Suggested model limitations include overlooking; individual beliefs, the significance of social factors (e.g. family, friends, religion and education), affective factors (personal feelings), and that many social behaviours are habitual (203, 205). It does not give acknowledgement to socio-cultural context and how this affects behaviour, and that behaviours do not always reflect personal attitudes (as predicted) because of varying social influences (203, 205). Therefore this model has limitations when exploring volition (beyond intention) and participation in daily activities.

Due to the dearth of information regarding the linkages between volition and participation, it is important to examine the associations between these concepts including what motivates older adults to engage in the wide repertoire of daily activities. Health professionals may be able to foster individual's level of volition through the selection of personally meaningful activities within intervention programmes. More targeted activities may increase long-term adherence to therapeutic interventions and positively impact health outcomes. This paper will examine if volition is associated with participation in a sample of older people, and whether volition explains their level of participation in specific activities.

6.1.3 Methods

A cross-sectional design was utilised with older adults residing in Victoria, Australia. This was the second phase of a previously reported parent cohort study (24). Ethical consent was obtained through Monash University Human Research Ethics Committee.

The parent study sample was randomly selected from the 2006 Victorian residential telephone records. At the conclusion of the study, participants were asked if they could be contacted for further research. Three hundred and sixty-eight people provided consent and were called for a follow-up interview. Participants provided verbal consent via telephone, were 70 years or over and living in their own homes. The inclusion criteria included; 1) ability to converse over the phone in English (self-determined) and 2) no significant cognitive impairment. Cognitive ability was determined by the 'Short orientation-memory-concentration test' (154). A score ≥ 13 (range 0-28) indicated significant cognitive impairment and involvement was discontinued.

Collection of data was carried out through phone interviews. Initial contact was made over a six-week period by one of seven researchers trained by the project manager. The participant was contacted at the scheduled time and provided inclusion requirements were met then data on demographics, participation in daily activities and volition were collected. The time taken to collect this information ranged from 12 to 18 minutes depending on the answers given to the researchers and the number of activities identified. Data was directly entered into Survey Monkey® (database) by the investigator.

The interview questions gathered demographics comprising age, gender, and living situation. Participation data was collected on two subscales (participation) on the *Phone-FITT* tool (1). The Phone-FITT interview assembles data on activity performance over a specific time period (1). The Household subscale included six items: light housework, making meals, shopping, heavy housework, home maintenance and caring for others. The Recreation subscale included eleven items: lifting heavy weights to strengthen legs, exercises to strengthen legs, lifting weights to strengthen arms, home exercises, walking, dancing, swimming, bicycling, golf, gardening and *other* physical activities (1).

The researcher asked individuals to identify: whether they participated in specified activities in a typical week over the past month (*yes/no*), how often the activity was executed in that week (*frequency*), and how long the activity was performed on each occasion (*duration*) [1-15 minutes (1), 16-30 minutes (2), 31-60 minutes (3) and one hour or more (4)] (1). The *frequency* and *duration* scores were then summed to gain a participation score in each activity and a summative overall score can also be calculated within each subscale.

The overall score can be used to determine individual changes over time as it is not an absolute value (1). A score of zero indicates no participation. The Phone-FITT has reported criterion and construct validity with older adults [Coeff: .29 (95%CI: 0.01 to 0.53) to .57 (0.34 to 0.73)], -.2 (-0.5 to 0.14) to -.45 (-0.68 to -0.14) and test-retest reliability (seven days apart) [intra-class correlation: .77 (0.63 to 0.87)] (1).

For participants who answered yes to participating in a specific activity, their volition was measured by the three-item screening tool, the *Volition Scale* (147) (Appendix 3.5). The instrument was designed for this study and based on the Occupational Questionnaire (117). The items are identified as; *personal causation* "one's sense of capacity and effectiveness", *values* "what one finds important and meaningful to do", and *interests* "what one finds enjoyable or satisfying to do" (7). The scale gathers a self-reported score over three questions on a five-point Likert scale (153) from 1) strongly agree to 5) strongly disagree. The individual scores were summed with the overall score calculated against the normative Rasch adjusted scores (range of -7.66 to 6.5) (147). The Volition Scale has documented construct validity with Rasch analysis derived *infit* mean square (MNSQ) 0.75 to 0.99; overall mean [SD] 0.89 [0.10], *outfit* MNSQ 0.86 to 1.0 overall 0.92 [0.06] (147, 206). As the normative scores are reversed (lower number equals higher volition) for the purpose of reporting in this paper, the scores were multiplied by -1 so that a higher score represented higher volition for ease of interpretation.

Following data collection and entering, statistical analyses were completed using linear regression to determine associations using STATA 11.2 (183). Simple linear regressions were completed with participation (dependent variable) in each of the 17 activities/items and volition (independent variable) to identify

significant associations (set at $p \leq .05$). Multiple regressions were then performed, entering the factors that reached significance (age, gender and living situation) to explore the effect of these as potential confounders.

Assumption checking of residuals was completed to distinguish linearity, normality, homogeneity and independence to determine the most parsimonious model fit. Normal distribution of data was tested using the Shapiro-Wilk test (184). If distribution items did not reach normality the "ladder of powers" (STATA) was applied to determine the appropriate transformation. Supplementary regressions would occur following transformation if necessary (158).

6.1.4 Results

Approximately two-thirds (66%, $N = 244$) of the 368 surveyed responded to the study and met the inclusion criteria. The mean age of participants was 77.5 years ($SD 5.7$) with 60% female and 127 (52%) stating they lived alone. The remaining 117 people lived with either a spouse/partner or other family member. Over 59% ($n=144$) reported having arthritis, nearly 30% ($n=72$) with heart disease, approximately one quarter reported a visual impairment ($n=64$), cancer ($n=57$) or osteoporosis ($n=55$). Other health diagnoses included stroke, depression, diabetes and lung disease. Many diagnoses presented as comorbidities although this figure was not captured.

Four activities of significance evolved following simple linear regression (Table 6.1). The activities were: Meal preparation [Coeff (95% CI) p =value; [0.44 (0.07, 0.80) $p = .020$], shopping [0.09 (0.01, 0.17) $p = .032$], walking for exercise [0.38 (0.23, 0.52) $p < .001$] and gardening [0.23 (0.08, 0.37) $p = .002$]. A positive association was consistently identified between higher levels of participation and a higher level of volition.

Table 6.1: Regression results simple linear regression (participation with volition).

Activity item - participation	Coefficient	95% Confidence Interval (CI) *	P-value	R squared
1. Light housework (n=225)	0.30	(-0.01, 0.61)	.056	0.02
2. Making meals (n=240)	0.44	(0.07, 0.80)	.020	0.02
3. Shopping (n=239)	0.09	(0.01, 0.17)	.032	0.02
4. Heavy housework (n=163)	0.06	(- 0.11, 0.22)	.505	0.00
5. Home Maintenance (n=98)	0.13	(-0.08, 0.35)	.224	0.02
6. Caring for another person (n=23)	-0.68	(-3.27, 1.90)	.588	0.01
7. Heavy weights (n=23)	0.47	(-0.04, 0.98)	.071	0.15
8. Strengthen legs (n=77)	-0.66	(-0.61, 0.48)	.809	0.00
9. Strengthen arms (n=51)	0.03	(-0.43, 0.49)	.900	0.00
10. Home exercises (n=50)	0.12	(-0.22, 0.46)	.478	0.01
11. Walking (n=163)	0.38	(0.23, 0.52)	<.001	0.14
12. Dancing (n=9)	0.17	(-0.45, 0.78)	.544	0.05
13. Swimming (n=19)	0.12	(-0.22, 0.45)	.477	0.03
14. Bicycling (n=23)	0.16	(-0.17, 0.50)	.324	0.05
15. Golf (n=14)	0.09	(-0.29, 0.20)	.128	0.18
16. Gardening (n=182)	0.23	(0.08, 0.37)	.002	0.05
17. Other exercises (n=47)	-0.10	(-0.59, 0.39)	.694	0.00

* Results multiplied by -1, n= number of people who performed the activity out of overall 244 participants

Subsequent multiple regression with confounding factors resulted in six significant results (higher levels of participation with higher volition levels). These included the four previous activities; meal preparation [0.48 (0.11, 0.84) $p = .011$] shopping [0.09 (0.01, 0.17) $p = .037$], walking for exercise [0.39 (0.24, 0.54) $p < .001$] and gardening [0.24 (0.09, 0.39) $p = .002$], plus two additional; light housework [0.32 (0.01, 0.62) $p = .042$] and weights to strengthen legs [0.58 (0.05, 1.10) $p = .034$]. Two significant confounding factors were identified: living situation with light housework ($p = .021$), and gender with meal preparation ($p = .001$). Higher participation in light housework was exhibited for those who lived with others ($n=104$ of those performing activity), and higher participation in meal preparation was exhibited with females ($n=143$ for activity) (Table 6.2).

A log transformation was completed as normality was not reached with participation data. Multiple regression results established increased p -values on light housework ($p = .008$), shopping ($p = .018$), weights to strengthen legs ($p = .031$), walking for exercise ($p < .001$) and gardening ($p = .001$), however meal preparation decreased ($p = .060$). The following changes occurred with the

explained model variance (r squared); light housework (.05 to .07), shopping (.04 to .05), walking (.15 to .16) and gardening (.06 to .07), meal preparation (.07 to .06) and weights to strengthen legs (.35 to .31) (Table 6.2).

Table 6.2: Multiple regression of items with significant volition scores using original and transformed data.

Activity item	Coefficient ^a 95% Confidence Interval (CI) ^a		P-value ^a	R squared ^a	Coefficient ^b 95% Confidence Interval (CI) ^b		P-value	R squared ^b
1. Light housework (n=225)								
Volition	0.32	(0.01, 0.62)	.042	0.05	0.04	(0.01, 0.07)	.008	0.07
Age	0.00	(-0.10, 0.11)	.981		0.01	(-0.01, 0.02)	.364	
Gender	1.17	(-0.10, 2.45)	.071		0.12	(-0.01, 0.24)	.063	
Living Situation	1.48	(0.23, 2.74)	.021		0.14	(0.01, 0.26)	.030	
2. Meal prep (n=240)								
Volition	0.48	(0.11, 0.84)	.011	0.07	0.02	(0.00, 0.05)	.060	0.06
Age	0.00	(-0.14, 0.15)	.993		0.00	(-0.01, 0.01)	.797	
Gender	2.71	(1.06, 4.35)	.001		0.19	(0.08, 0.31)	.001	
Living situation	-0.28	(-1.91, 1.35)	.733		-0.04	(-0.16, 0.07)	.447	
3. Shopping (n =239)								
Volition	0.09	(0.01, 0.17)	.037	0.04	0.02	(0.00, 0.03)	.018	0.05
Age	0.02	(-0.01, 0.06)	.183		0.00	(-0.00, 0.01)	.138	
Gender	-0.23	(-0.62, 0.16)	.244		-0.04	(-0.11, 0.02)	.172	
Living situation	0.27	(-0.12, 0.65)	.179		0.04	(-0.03, 0.10)	.253	
7. Heavy weights (n=23)								
Volition	0.58	(0.05, 1.10)	.034	0.35	0.13	(0.01, 0.24)	.031	0.31
Age	0.17	(-0.06, 0.39)	.138		0.03	(-0.02, 0.08)	.167	
Gender	-1.52	(-3.53, 0.48)	.128		-0.21	(-0.64, 0.23)	.334	
Living Situation	-1.75	(-3.94, 0.43)	.109		-0.36	(-0.84, 0.12)	.130	
11. Walking (n=163)								
Volition	0.39	(0.24, 0.54)	<.001	0.15	0.06	(0.04, 0.08)	<.001	0.16
Age	-0.04	(-0.10, 0.02)	.165		-0.01	(-0.02, 0.00)	.159	
Gender	-0.21	(-0.86, 0.44)	.528		-0.06	(-0.16, 0.04)	.254	
Living situation	0.21	(-0.45, 0.87)	.533		0.05	(-0.05, 0.15)	.354	
16. Gardening (n=182)								
Volition	0.24	(0.09, 0.39)	.002	0.06	0.04	(0.02, 0.07)	.001	0.07
Age	0.01	(-0.07, 0.08)	.901		0.00	(-0.01, 0.01)	.853	
Gender	0.09	(-0.71, 0.89)	.818		0.05	(-0.09, 0.18)	.512	
Living situation	0.46	(-0.37, 1.29)	.277		0.09	(-0.05, 0.23)	.221	

^a Original dependent variable data (Coefficient results multiplied by -1), ^b transformed dependent variable data (log transformation, coefficient results multiplied by -1), n= Number of people who performed activity

Considering the transformed data regression, the more parsimonious model detected for participation and volition was: light housework ($p = .008$), shopping ($p = .018$), weights to strengthen legs ($p = .031$), walking ($p < .001$) and gardening ($p = .001$) with relevant confounding factors: gender ($p = .049$) and living situation ($p = .015$). Reported overall explained variance was 7% (r^2) (refer Table 6.3).

Table 6.3: Final model results: participation (in five significant activities) with volition, gender, and living situation.

Variables	Coefficient ^a 95% Confidence Interval (CI)	P-value ^a	R squared ^a (overall)
Volition	0.04 (0.01, 0.07)	.006	.07
Gender	0.12 (0.00, 0.25)	.049	
Living Situation	0.15 (0.03, 0.27)	.015	

^a Using log transformation data (Coefficient results multiplied by -1)

6.1.5 Discussion

The results indicate a positive association between participation and volition with two daily activities and three more physical activities: light housework, shopping, weights to strengthen legs, walking for exercise and gardening. Findings denote that older adults exhibited a higher level of participation in activity when higher levels of volition were present. This resonates with previous research that considers volition as a pre-requisite for people to engage in action and perform activities (4, 99). All people participated in one or more household activities; fifteen did not participate in any recreation activity. Twelve activities did not reach significance (across household and recreation activities). Data regarding why people did not participate in activities was not collected.

Previous research has described positive effects of exercise programmes that target balance and strength for older adults (67). However, incorporation of daily activities (occupations) is not often considered except in the context of occupational therapy interventions (207). If people participate more in activities where they exhibit high degrees of volition then judicious inclusion of daily activities may be warranted in all health programmes (7, 55). This would potentially increase physical and cognitive functioning of older adults and enhance health and wellbeing (39, 105, 200).

Regarding demographic factors, two were significant in the final model: living situation and gender. Those living with others identified higher levels of volition and participation. This could be explained by family encouragement or the desire to “help” out. In contrast, individuals who lived alone may have been either independent or received assistance with activities. Investigation into possible explanations was not gathered. Gender reached significance where females showed a higher level of participation in activities than males. This may be due to the involvement in typical gender specific activities (e.g. household tasks had higher levels of participation than recreation activities) or the larger number of females. Age was not significantly associated and difficult to explain in this context.

There are implications of this study for health professionals prescribing rehabilitation programmes for older people. Consideration of volition should be present when addressing engagement and adherence to therapeutic interventions. The Volition Scale is a useful screen of volition and additional research into application of this tool would be beneficial. Self-selection of activities that are meaningful to the individual within treatment programmes may have a favourable impact on long-term adherence of home-based programmes (4).

A suggested hierarchy of determining the activities to incorporate within rehabilitation programmes can be concluded. Programmes could incorporate a choice of: weights for strengthening, light housework and gardening. Therapists commonly use strength-based programme prescription for people with functional decline and to reduce the risk of falling (67, 94). For participants who choose to carry out an exercise programme, an evidenced-based programme could still be recommended (67). Alternatively, light housework and gardening could be considered with clients who are resistant to this type of programme, giving people a choice of how they participate. The latter activities offer a range of strength and balance challenges which could be integrated into graded intervention programmes and have a positive effect on physical and mental functioning (208-210).

Two additional activities (walking and shopping) were determined as significant. Performing these activities may be considered as “risky” due to the potential of

falls (211). However, this may be influenced by individual and contextual variables and should not be negated completely (212). These activities could be integrated into intervention programmes with caution depending on the individual's choice, usual daily activities and ability level.

Limitations

Study limitations included the lack of volition data for people who did not participate in an activity. The study did not ascertain if the lack of participation was linked to a lack of volition for non-participants or influenced by other unidentified determinants. This may have impacted the outcome by not recognising correlation significance for some of the activities with small sample sizes. However, not all activities require large degrees of volition as they may be *automatic* or *passive* activities that some people engage in. Further research is required to identify the level of volition for people who do not pursue an activity, as lack of volition may have impacted on the decision not to participate. Additional investigation to establish the enablers of, and barriers to, participation and volition following a significant health event is also required.

Results may reflect a biased sample due to convenience sampling, geographical bias and with people that were predominantly active (community dwelling). Frailer or more vulnerable participants were not targeted. The less able individuals may have opted out of the interview, or lived in supported care. Recruitment did not account for people with a hearing impairment (unable to use the phone) or those with dementia or cognitive impairment. The age group of people 70 years and over is an additional limitation of this study, although it is likely that the findings are equally applicable to people under this age. Further research with diverse populations and age groups is required to increase the generalisability of the results.

The associations between participation in daily activities and volition suggest an important consideration for older people regarding prescription of health intervention programmes. Therefore, implications for practice include providing a selection of evidence-based daily activities and identification of individual volition levels for these specific activities. This may in turn improve adherence to prescribed treatment programmes for people living in the community and positively impact overall health and wellbeing.

Supplementary data

Table 6.4: Levels of participation and volition for shopping (household subscale) and walking (recreation subscale).

Shopping	Participation scores	Volition scores *
High	5	0
Low	0	6.82

Walking	Participation scores	Volition scores
High	18	0
Low	0	10.02

* Raw scores (lower number = higher volition)

6.2 Summary of chapter six

This chapter has presented evidence that volition has a positive association with participation. That is, when volition is high then participation is also high. This highlights the need for clinicians to consider the psychosocial components of volition and how this might impact on the adherence to rehabilitation programmes prescription. The causal link between volition and participation has not been established within this study. The concept of volition has not been integrated with the theory of planned behaviour or the complexities of positive psychology, health promotion or personal motivation. These areas are beyond the scope of this thesis yet are important research implications to consider in the future.

Following this study presented, there was still uncertainty regarding the influences of people's decision making around participation in daily activities and what supports or inhibits this action. The successive study was designed to investigate the enablers of, and barriers to, participation with older adults following a stay in hospital.

7 Enablers of, and barriers to, participation

Study 5:

Enablers of, and barriers to, participation from an older adults' perspective post-discharge: A qualitative study.

Authors: Pritchard, E., Warren, N., Barker, A., Brown, T., & Haines, T.

This chapter has been revised and accepted for publication since the thesis was submitted for examination (Appendix 7.1). The published article is not able to be printed in this thesis due to the copyright agreement. Please find the final article referenced as:

Pritchard, E., Warren, N., Barker, A., Brown, T., & Haines, T. (2015). Personal life approach: An interactive way of understanding older adults' participation in activities following hospitalization. *The Gerontologist*.
doi:10.1093/geront/gnu115

For access to the full text article please see:

<http://gerontologist.oxfordjournals.org/content/early/2015/02/11/geront.gnu115.full?keytype=ref&ijkey=YGBI3UNNapCK8V3>

7.1 Précis

The previous chapter identified that a significant association existed between participation and volition with community-dwelling older adults. Understanding volition and providing validated instruments for assessing levels of volition are important factors to promote participation and have been established. The aim of health interventions for clients who have been discharged from hospital is to improve participation in daily activities to counteract the potential negative health outcomes linked with a stay in hospital (e.g. decline in physical or cognitive functioning). Therefore understanding the factors involved with increasing participation is likely to lead to identifying methods of improving the efficacy of health interventions.

Although a stay in hospital may have a negative impact on the participation levels of older adults, research has provided little understanding of the enablers of, and barriers to, returning to participation post-discharge. Identification of factors that significantly impacted participation from the previous four studies concluded that depressive symptoms, falls over the last 12 months, and volition were all notable. The next research gap was to gain further understanding of any changes to participation after a stay in hospital and to investigate the contributing factors to this from the participants' perspective following hospitalisation. Identification of these factors could potentially lead to a way for health professionals to promote and enhance participation amongst older adults following hospitalisation.

This inquiry led to the design of study 5 to address three research questions - i) Do changes in participation occur following hospitalisation?; ii) Why do/don't changes occur in the level of participation of older adults discharged home from hospital?; iii) What are the enablers of, and barriers to, participation following hospitalisation? This inquiry was initially designed as a mixed-methods study in which qualitative data from semi-structured interviews were gathered simultaneously with quantitative scale data from the same cohort. The original intention was to provide quantitative evidence of volition and participation together with analysis of the narrative. However, following the selected journal peer review, the reviewers recommended a number of revisions to be addressed before being accepted for publication. One of the main concerns was that the quantitative data was limited in numbers and did

not add richness to the qualitative study (within the current design), therefore needed to be reshaped.

The number of expected participants recruited was met however following completion of the study and reviewer comments, it was identified that the quantitative data required a larger cohort in order to reach effect. This part of the analysis was then set aside for the purposes of the published article. Following this feedback it was decided that an exploratory qualitative design was better suited for the data presented and was submitted as such (chapter seven). The quantitative analysis and results were completed and have been presented in the addendum to this chapter (section 7.2). However, due to the number of limitations with the data these were not included in the publication.

The qualitative study (awaiting second review following revisions) reported one main theme (*personal life approach*) with two subthemes: i) *interpretation of physical and mental health status*, and ii) *interactions and support*. The personal life approach (optimistic **or** pessimistic) was identified as a filter for the other sub-themes and either supported or inhibited participants' participation post-hospitalisation. These themes are discussed in detail in the publication presented in this chapter and also re-examined in the final chapter.

PART B: Declaration for Thesis Chapter seven

Monash University

Declaration by candidate

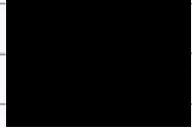
In the case of Chapter seven, the nature and extent of my contribution to the work was the following:

Enablers and barriers to participation in daily activities from the older adults' perspective following discharge: A mixed-method study.	Extent of contribution (%)
Nature of contribution	
Recruitment	100%
Data gathering – interviews/quantitative	100%
Thematic analysis	80%
Calculation of data analysis	80%
Cross-checking data analyses	100%
Write up of manuscript	100%
Submission of manuscript to journal	100%
Subsequent revisions to manuscript as required by journal	80%
Primary author – Elizabeth Pritchard	80%

The following co-authors contributed to the work. Co-authors who are students at Monash University must also indicate the extent of their contribution in percentage terms:

Name	Nature of contribution	Extent of contribution (%) for student co-authors only
Narelle Warren Co-author	Guidance provided for coding and thematic data analyses Editing of draft of manuscript Intellectual input to the study Guidance provided for subsequent revisions required by the journal	
Ted Brown – Associate supervisor	Guidance provided for data analyses Editing of draft of manuscript Intellectual input to the study Guidance provided for subsequent revisions required by the journal	

Anna Barker Associate supervisor	Editing of draft of manuscript Intellectual input to the study Guidance provided for subsequent revisions required by the journal	
Terry Haines Primary supervisor	Intellectual input to the study Cross checking of data analyses Editing of the draft of manuscript Cross checking of data analyses Guidance provided for subsequent revisions required by the journal	

Candidate's Signature  Date 15/5/16

Declaration by co-authors

The undersigned hereby certify that:

- (1) the above declaration correctly reflects the nature and extent of the candidate's contribution to this work, and the nature of the contribution of each of the co-authors.
- (2) they meet the criteria for authorship in that they have participated in the conception, execution, or interpretation, of at least that part of the publication in their field of expertise;
- (3) they take public responsibility for their part of the publication, except for the responsible author who accepts overall responsibility for the publication;
- (4) there are no other authors of the publication according to these criteria;
- (5) potential conflicts of interest have been disclosed to (a) granting bodies, (b) the editor or publisher of journals or other publications, and (c) the head of the responsible academic unit; and
- (6) the original data are stored at the following location(s) and will be held for at least five years from the date indicated below:

Location(s) Allied Health Research Unit - Kingston Centre

[Please note that the location(s) must be institutional in nature, and should be indicated here as a department, centre or institute, with specific campus identification where relevant.]

Signature 1  Date 15-2-14
Signature 2 
Signature 3

7.2 Addendum to qualitative study (not reported in study 5)

Quantitative analysis (not for publication)

Quantitative data analysis included Pearson correlations (231) to identify significant moderators from the demographic variables and scale scores, and the Wilcoxon signed-rank test (232) to determine any changes in the levels of participation and volition pre- and post-hospital. Both were calculated using STATA 11.2 (156). Pearson correlation coefficients (231) were selected to identify the direction and strength of the relationships between the demographic factors collected. This is a method of linear measurement reporting the values between two variables where '0' indicates no correlation value, '-1' signifies a strong negative correlation and '+1' denotes a strong positive correlation.

The Wilcoxon signed-rank test was selected to compare differences between scores (pre- versus post-hospital) of participation and volition (significance was set at $p \leq .05$) from the paired data of the same sample and measured on an ordinal scale. A simpler *t-test* (for comparison) could not be performed as the data could not be assumed as being normally distributed. This was confirmed following a scatter plot of the results. The Wilcoxon signed-rank test is a non-parametric method of analysis which "compares the median of a single column of numbers against a hypothetical median" (233). Interpretation of the test involves identification of the median for both sets of data (e.g. the median of the pre-hospital and post-hospital scores for volition and participation). The results then produce data that indicate which pairs deviate from the median (e.g. positive or negative change from pre-hospital median to post-hospital median) following the intervention or timeframe, which indicates the degree of change. Output is identified through a 'z' value (standard score) and the *p* value (probability score).

Quantitative results (not published)

Correlation results from age, gender, setting, falls rate pre-hospital, falls rate post-hospital, days in hospital and English as a second language variables identified seven correlations. A higher rate of falls pre-hospital was associated with being female ($r=.33$) and those living with others (.45); a higher falls rate post-hospital was

associated with being female (.33); more days in hospital was associated with a stay in rehabilitation setting (.47), living with others (.40) and a higher numbers of falls post-hospital (.70); those who spoke English as a first language was associated with being female (.31); higher confidence to perform activities was associated with females (.51), for those from a rehabilitation setting (.34), a higher pre- and post-hospital falls rate (both .33), and those who spoke English as a first language (.35); higher physical health component scores (PCS) were associated with being female (.37), increased falls rate post-hospital (.37), increased days in hospital (.33) and increased Modified Falls Efficacy Scale (MFES) scores (indicating higher levels of confidence) (.41); higher mental health scores (MCS) were associated with increased age (.48), living with others (.38), and falls pre-hospital (.40) (Table 7.2).

Findings from the Wilcoxon signed-rank test identified significant changes between pre- and post- hospital volition scores for acute ($z = -2.845, p=.004$), rehabilitation ($-1.955, p=.050$), and combined settings ($-3.323, p< .001$). Results for significant changes between pre- and post- hospital participation scores for acute ($z = 2.705, p=.006$), rehabilitation ($2.668, p=.007$), and combined settings ($3.786, p< .001$) (Table 7.3).

Table 7.2: Demographic matrix - correlation coefficients (*r* value).

	Age	Gender	Setting	Living sitn.	Falls rate pre-hosp.	Falls rate post-hosp.	Days in hosp.	English as 2 nd language	MFES	Physical health score (PCS)
Gender 0=male, 1=female	-0.27									
Setting 0=acute, 1=rehabilitation	0.19	0.15								
Living situation ^a	-0.25	0.25	0.25							
Falls rate pre-hospital	-0.02	0.33^d	0.16	0.45^c						
Falls rate post-hospital	-0.18	0.33^d	0.16	0.28	-0.05					
Days in hospital	0.16	0.02	0.47^c	0.40^c	0.06	0.70^b				
English as 2 nd language 0=yes, 1=no	-0.12	0.31^d	0.14	0.12	-0.13	-0.11	-0.06			
Modified falls efficacy scale	0.22	0.51^c	0.34^d	0.00	0.33^d	0.33^d	0.25	0.35^c		
Physical health score (PCS)	0.11	0.37^d	0.26	0.13	0.10	0.37^d	0.33^c	0.14	0.41^c	
Mental health score (MCS)	0.48^c	0.29	0.21	0.38^d	0.40^c	0.13	0.22	0.21	0.24	0.05

^a Living situation: 1 = alone, 2 = spouse/ partner, 3 = other family, 4 = friend, 5 = other

^b very strong correlation ($r = \geq .70$ [+/-])

^c strong correlation ($r = .40$ to $.69$ [+/-])

^d moderate correlation ($r = .30$ to $.39$ [+/-])

Table 7.3: Summary of falls efficacy, physical health, mental health, volition, level of participation (n=21).

Quantitative scales	Mean (SD)	Range	Wilcoxon z value	p value
MFES (n=20) ^a	7.9 (1.6)	5.3, 9.9		
SF 12 v2				
Physical health component score	32.7 (10)	15.8, 58.5		
Mental health component score	50.5 (9.9)	25.2, 61.2		
Volition Scale (n=20) ^a				
All recalled pre hospital	3.4 (1.6)	0.56, 6.38		
All post hospital	5.7 (2.5)	2.39, 11		
Acute recalled pre/post hospital			-2.845	.004
Rehabilitation recalled pre/post hospital			-1.955	.050
Combined recalled pre/post volition			-3.323	<.001
Participation level				
All recalled pre hospital	22.4 (6.9)	10, 39		
All post-hospital	12.5 (8.8)	0, 29		
Acute recalled pre/post hospital			2.705	.006
Rehabilitation recalled pre/post hospital			2.668	.007
Combined recalled pre/post participation			3.786	<.001

^a One person did not complete.

MFES = Modified Falls Efficacy Scale (higher score indicates complete confidence).

SF-12 v2 = Short Form-12 version 2 (normative score is 50) higher scores indicate higher level of physical/mental health.

Volition Scale, **lower** score indicates **higher** level of volition.

Participation scores, higher scores indicate higher level of participation.

Discussion

Results identified a number of correlations between demographic variables and the scores from the MFES and SF-12v2 scales. However it is difficult to ascertain specific patterns from this data as the participants results were not consistent across areas. That is, for those with the lowest levels of physical component scores (PCS) identified there was no identifiable pattern across each of the variables or other scaled scores. The strongest association was calculated between increased days in hospital and a higher falls rate following hospitalisation. This supports previous studies that have identified a *deconditioning* of older adults when in hospital with an increased risk of falls following discharge (16, 36). The three people who experienced falls post hospital, reported very low PCS, (range 15.8 to 33.21) with a fear of falling (MFES) score between 5.3 and 7.8 (maximum 10). The implications of these findings suggest that health clinicians need to address ways to minimise the effects of hospitalisation on decreased function, increase

confidence with performing activities and maximise safety in the home following hospitalisation.

The subsequent strong associations were reported between falls rate pre hospital/living situation, days in hospital/rehabilitation (an expected result), days in hospital/living situation, increase confidence/females and PCS, increased MCS/age as well as falls pre-hospital. The variable of living with others warrants further investigation as it is present in two of these results and could be representative of the decreased levels of function that the individual already has, where they require assistance in their everyday activities by the other person(s) with whom they live. Alternative possibilities are regarding the expectation of life roles for some individuals where their return home may require them to care for or be responsible for someone else. This is likely to increase the days for a hospital stay as the demand on ability following discharge may be higher. Nine of the participants lived with another person which varied from a spouse/partner to another family member. Of these nine however, eight of them displayed scores lower than the normative score of 50 on the PCS, four scored under the norm (50) for MCS, a mix of scores on the MFES (ranging from 5.29 to 10), and eight identified a decline in participation scores stated for pre- to post- hospital. In contrast, participants who live alone may feel the need to be better prepared for their return home alone, although this is not supported by this analysis.

The next two highest results indicated that females in this sample were more confident to perform activities without fear of falling, and the MCS scores of the older participants were higher. It is difficult to draw any conclusions from either of these results except to acknowledge that with age comes a higher propensity to be able to manage one's own emotional responses. This aligns with current psychology research trends regarding emotional ageing (234). The remaining results provide information regarding the associated variables that reached significance, however there were no specific patterns detected possible due to the small sample size for quantitative analysis and the diversity of responses.

The results reported from the Wilcoxon analysis identified that there were significant changes in pre- and post-hospital scores for both volition and participation. The alterations in levels of participation align with previous studies regarding changing functional status and participation levels following

hospitalisation (16, 36). This indicates that neither level is fixed and that volition and participation are influenced by circumstances (health status) as well as other factors. This has implications for health professional in regards to the possibility of influencing levels of volition with individuals to increase participation in daily activities.

Limitations and implications

There were a number of limitations in the original design of this study. The quantitative data gathered were from the same sample group which was identified as an adequate sample number for the qualitative data (presented in chapter seven) however, sample size was not adequate to provide meaningful interpretation of the quantitative data. Only three of the four scales used in this data collection met this requirement (the SF-12 v2, the MFES, and the VoS) therefore the participation data was limited. The limitation of gathering participation data through conversation (rather than a validated scale) was also not effective for quantitative analysis and affected reliability of the analysis (166, 235). Requesting participants to recall information regarding - what they “used to do prior to hospital” - introduced recall bias and was likely to negatively impact the results. Future research in this area following a mixed-method design (as originally intended) would benefit from gathering data on validated scales, with a representative sample of the population providing sufficient power for the quantitative statistical calculations.

Conclusion

The quantitative data that were collected as part of the exploratory qualitative study have presented a number of findings. The results indicated areas for consideration by health professionals when working with older adults' post-hospitalisation. Participants' age, living situation and the number of days spent in hospital can present a cause for concern that may impact on their reduced level of participation however two of these factors (age and living with others) may also support or enhance their mental health. However due to the small number of participants that contributed to this component of the study and lack of patterns within the data, it was determined that the findings were unable to be included in the published paper (study 5).

7.3 Summary of chapter seven

This chapter has presented evidence of the enablers of, and barriers to, participation as identified by 21 older adults who had returned home after hospitalisation. The qualitative study highlights the need for health professionals to consider the individual's personal life approach when working towards increasing participation following a hospital stay. This approach is likely to influence the choices of activities that individuals make and has the potential to negatively or positively impact on rehabilitation programme adherence, and ultimately their health and wellbeing.

Further investigation into rehabilitation programmes that address cautionary actions (including fear of falling) and reaffirm people's restoration of active engagement in previous activities following hospitalisation, is also warranted. However this was outside the scope of this project. Additional research is required to further develop the findings of this study and link with the previous four studies that have provided insight into the importance of considering psychosocial factors (depression, volition, personal life approach) when working with older adults to increase their participation following hospitalisation.

8 Discussion and conclusion

8.1 Summary of findings

The five studies presented in this thesis are the first comprehensive investigations of participation in daily activities and volition (the thinking process to elicit action) with older adults (7). The findings aim to inform the practice of health professionals when working with the older population (≥ 65 years). The older population is expected to triple globally from 600 million to nearly two billion people by 2050 (40) with a projected increase in health service demand resulting from older adults over the next three decades (12, 14). This is due to the growing numbers of adults living longer, together with the likelihood of reduced functional abilities and age related frailty (8, 14). Frailty negatively impacts on the level of participation and is expected to place an unprecedented future demand on health services from this age group (11).

Participation in activities has been argued as being essential for humans through which we develop skills, connect with others, and discover personal meaning of life (52). Participation in life activities has been identified as contributing to improved physical and mental health (39, 236). Involvement in meaningful activities that increase participation and improve wellbeing, are likely to decrease healthcare utilisation by older adults (38, 39). Therefore it has been suggested that health professionals need to know how to optimise participation with older adults following hospital. This could in turn decrease the impending health burden.

The studies within this thesis addressed the aim of investigating how participation in daily activities (occupational participation) was impacted following hospitalisation and explored reasons why this occurred. The first study identified that participation can be improved amongst older adults through falls prevention interventions. The latter studies explored the determinants of participation including the role of volition in the loss and recovery of participation amongst older adults living in the community, and for those who have recently been in hospital. The investigations incorporated determinants of participation, validation of a brief volition screening scale, exploration of the association between volition and participation, and identification of the enablers of, and barriers to, returning to participation following hospitalisation from the participant's perspective (Table

8.1). The studies sought to address the research aims through examining two samples of older people. The first group included people living at home in the community to profile levels of participation and volition in the general population (>70 years), and the second involved older adults returning home following a stay in hospital (≥ 65 years). These results have provided empirical evidence to understand a profile of participation amongst older adults and the impact of volition on participation more fully. They have also recognised enablers of, and barriers to, participation following hospitalisation. The studies in this thesis identified four main determinants of participation amongst older adults:

- i) the presence of *depressive symptoms* was associated with decreased participation in daily activities,
- ii) a higher number of *falls* experienced over the previous 12 months was associated with restricted participation in household activities,
- iii) high levels of *volition* was associated with higher levels of participation in five specified activities,
- iv) the *personal life approach* (more optimistic or pessimistic) was crucial to the way people adapted to their disruption in activities following hospitalisation and return to previous participation.

Table 8.1: Summary of study findings.

Chapter	Content	Findings
1. Introduction to participation and ageing;	Rationale for the thesis was identified.	Age related frailty has been identified as a health concern where physical and cognitive decline can occur. This increases the demand on health services. Previous studies have used various definitions of participation, and few studies have explored participation and older adults.
Study 1 Review of current literature	Examining the impact of falls prevention programmes on participation.	The systematic review and meta-analysis identified that falls prevention programmes can have a positive impact on participation in older adults. This demonstrated that participation can be increased with targeted interventions.
2. Introduction to volition;	Defining volition with supporting evidence discussed.	Engagement in meaningful activities is an innate human need, that includes choice of activities and incorporates three components known as volition i) understanding of self-ability, ii) holds personal meaning, iii) has a degree of interest and satisfaction for the individual.
Structure of thesis	Thesis aims and objectives were identified.	
3. Methodology of studies 2-5	Description of the structure of each study with rationale for selection of design and instrumentation.	Three study designs were incorporated to explore the research questions. These included cross-sectional design with linear regression (2 studies), cross-sectional design with Rasch measurement modelling, and qualitative design with thematic analysis.
4. Study 2 Factors impacting on participation	Exploring the determinants of participation (demographics, physical health, and mental health) for older adults living in the community.	Minimal empirical evidence has been provided regarding the determinants of participation. Two significant determinants emerged depressive symptoms and the number of falls in the previous 12 months. Both were associated with decreased participation.
5. Study 3 Psychometric properties of the Volition Scale	Examining the construct validity of the Volition Scale, developed in this thesis.	There was no brief screening tool for volition available to use in a one-off session over the phone. The Volition Scale was developed and displayed construct validity and internal reliability.
6. Study 4 The association between participation and volition	Investigating the impact of volition (as measured on the Volition Scale) on levels of participation in daily activities.	There was an association between participation and volition for a selection of daily activities. People with a higher level of volition had higher levels of participation in; light housework, shopping, walking, weight for legs, and gardening.
7. Study 5 Older person's perspective on returning to participation after hospitalisation	Exploring enablers of, and barriers to, participation with older adults following a stay in hospital.	The personal life approach (optimistic or pessimistic) influenced interpretation of abilities and limitation which impacted on participation. A positive and optimistic approach increased participation levels and vice versa.

8.2 Synthesis of results

This research inquiry began with the investigation of falls prevention programmes with older adults. This is a current global area of concern due to the high prevalence of falls in the ageing population (16, 18). The incidence is reported as one in three adults (65-80 years) fall per year in the community(19, 20), which increases with age to one in two people fall annually (over 80 years) (19-21). The findings of the systematic review ascertained that falls prevention interventions had a positive impact on participation although the sample and effect sizes were small (201). This review highlighted an untapped area of investigation in health research and identified the shortage of evidence regarding the determinants of participation in everyday activities or occupations. These are completed within "one's socio-cultural context" and "desired or necessary for one's wellbeing" (7). The results of the review led to the broadening of the focus for this thesis to examine the levels of participation in general life activities of older adults residing in their own homes and the reasons why they participate.

The subsequent studies identified four critical areas for health professionals to consider within their practice. First, the presence of *depressive symptoms* amongst older adults was a significant determinant of participation (reported in study 2) where depressive symptoms were associated with lower participation levels in both household and recreation activities (31). Previous studies have identified that people who experienced depressive symptoms were less likely to engage in activities due to lethargy, negative thoughts, and sleeplessness (150, 188). Lack of participation has been shown to contribute to a declining cycle of physical and mental ill-health which incorporates *depression* (188, 192).

If left untreated, depressive symptoms can be exacerbated, which may lead to clinical depression and anxiety (150). This can further inhibit participation in activities and lead to increased hospitalisation, death through suicide, or increased risk of cardiac mortality (188, 237). People with depression have also been found to be three times more likely to not adhere to medical advice or interventions (238). This can negatively impact overall health and wellbeing which can increase health burden (238). However, screening for depressive symptoms by health professionals is not routine practice despite the recognised negative sequelae of depression.

Depression is included in the top nine National Health Priorities for Australia (239), which aligns with the World Health Organisation's priorities for prevention of ill-health and promotion of flourishing mental health (240, 241). However, depression has not been extensively investigated with older adults or with return to participation in daily activities in this population despite being identified as a priority health concern (242). These findings indicate that this area requires increased vigilance in assessment and intervention if health professionals are to positively influence participation levels as well as health outcomes with older adults (150, 187). Screening for depressive symptoms in all older adults should be considered as routine practice in health programmes post-discharge due to the link between depression and participation. This requires combining detection of depressive symptoms with a referral for diagnosis, treatment and/or inclusion of strategies for management of these symptoms in health programmes.

Second, the *number of falls* over the past year was identified in study 2 as a contributing factor which negatively impacted on the level of participation in household activities (31). The systematic review (study 1) identified that falls prevention programmes can indeed positively increase participation levels over time. Falls prevention in older adults is an area of priority both nationally and internationally with expenditure exceeding billions of dollars annually on research and prevention (14, 24, 243). However, the costs to health services (as well as personal and social costs) of falls are increasing exponentially despite this investment (29). This indicates continued urgency to address this outcome when examining participation with older adults as the incidence of falls and repeat falling increases with age (20, 21).

Falls prevention programmes and implementation of guidelines to minimise the risk of falling have been reported as being inconsistently carried out by clinicians with older adults (244). The studies in this thesis have supported the findings that falls is an area that negatively impacts participation and requires evaluation and management by health professionals. Therefore, it is suggested that a falls history needs to be gathered by all clinicians that are involved with older adults to enable appropriate referrals and/or interventions to be formulated (76). This is a difficult outcome to achieve as the barriers for implementation of falls prevention programmes have been identified with both clients and clinicians as lack of; knowledge, resources, health status, motivation and education (244, 245).

Clinicians have also described a number of factors that negatively impact their ability to focus on falls interventions in their work roles. These include competing demands between their discipline requirements and additional responsibilities, time constraints, lack of support, and lack of appropriate resources (including knowledge and skills) (244). Evidence has been published of a number of effective falls interventions (246). However researchers have also identified that people may not necessarily adhere to these interventions long-term and a new strategy is required as the rate of older adults who fall is continuing to climb (244, 247). Therefore, changes are required by health professionals for future approaches to interventions aimed at increasing participation levels with older adults who have fallen.

Third, *volition* was reported as a significant determinant of participation in studies 4 and 5 as higher levels of volition were associated with higher levels of participation. Volition has been identified as performing an important role in the selection of activities that people choose to engage in and ultimately on their level of participation (4, 7). Limited brief screening scales are available for measuring volition and this required the validation of the newly developed Volition Scale (VoS) that was adapted from the original validated instrument. Study 3 confirmed that the three items of the VoS measured the overall construct of volition (construct validity). The items included *personal causation* - the self-understanding that one has the skills to perform the required activity adequately; *values* - that the activity has meaning to the individual; and *interests* - that the individual has an interest in performing the activity and gains a degree of satisfaction from completing it (7). There is an increased likelihood of continued participation in, and adherence to activity programmes when volition is recognised prior to prescribing health interventions (4, 99, 117). Utilising robust clinical interventions to screen for volition can be integrated into practice to address the activities selected for inclusion in the intervention programmes.

Volition is not acknowledged in many health fields and infrequently recognised in professional practice and clinical guidelines. An exception to this is that motivation (proposed as the step before action is completed - *volition*) receives a rare mention in some documents. For example, Clinical Guidelines for Stroke Recovery (Australia) mention motivation once in that it was “useful in promoting adherence” (248). Previous studies investigating the success of health

programmes over time have highlighted non-adherence as a concern to effectiveness of rehabilitation programmes following discharge from hospital (or programme cessation) (93, 136).

One of the reasons for decreased adherence to health programmes included a lack of meaning of the activity to the individual which led to choosing to discontinue the prescribed activities (83, 93). These studies identified that adherence is a problem that may negatively impact on participation and long-term health outcomes however they did not consider volition in their programme prescription. Increased understanding of the broader psychosocial factors influencing participation (including volition) could be a vital moderating factor. This suggested a change of approach could contribute to improving adherence to recommended intervention programmes with a positive impact on health and wellbeing. Inclusion of the concept of volition in health programmes has potential implications for both health professional practice and policy development regarding screening prior to rehabilitation interventions.

Screening for volition and selection of more meaningful activities by the individual through using a *person-centred approach* (249) may have the benefit of increasing levels of adherence and improving long-term rehabilitation outcomes (116, 178). This approach implies a biopsychosocial emphasis (as opposed to a biomedical focus) taking into account the broader factors (beyond medical diagnosis and functional capacity) that influence a person's health and wellbeing. The assumptions of a person-centred biopsychosocial approach endorse the principle that the client is the expert in managing his or her own limitations and therefore needs to be given the *power* to direct the intervention process (249). This approach strongly advocates that a shared method of decision making is adopted and driven by the client and his or her family as appropriate (249). Using this person-centred method to programme planning can include screening for volition then providing the client with a range of meaningful activities to choose from as part of the treatment programme which is congruent with the findings of both volition studies completed in this thesis (25, 116).

The final area is the *personal life approach* (term developed in study 5) of individuals towards their current life circumstances which impacted on participation. This was identified as either optimistic (enhancing participation) or

pessimistic (restricting participation) as indicated in the study. An optimistic life approach was where the individual viewed their experiences and potential abilities through a lens of optimism and believed that they were able to control their responses to events with a positive impact on the outcome. This emerged as a powerful enabler of participation whereby the individual's life approach was shaped through their childhood experiences, modelling of influential people in their lives, and also developed throughout lifelong learning (221). The pessimistic approach was one where the individual did not believe they could elicit change or bounce back from an adverse situation (known as resilience). The language used and thinking that occurred (either positive – can, or negative - can't) in response to life events also impacted on participants' return to previous levels of participation. The findings of study 5 identified that the personal life approach - supported by their spirituality - acted as a filter for the way participants interpreted their physical and mental health status, as well as their social supports or interactions. Consideration of these enablers of, and barriers to, participation could be combined with providing a choice of meaningful therapeutic activities in health programmes.

The findings of study 5 support previous research with adults regarding the need for optimism and resilience in response to adversity (140). Improved physical and mental health outcomes have also been associated with these coping strategies after disruption of life events (e.g. through illness or hospitalisation) (140, 141). The findings also align with the model of internal locus of control (226, 250) described as the degree to which individuals believe that they have control over their own health rather than outcomes due to chance or luck (external locus of control) (227, 228, 250). Participation is likely to be increased through a combination of an optimistic personal life approach, higher levels of volition, strong resilience (to overcome adversity), and an internal locus of control (229). However, these areas require further investigation with older adults to determine their impact on participation following hospitalisation.

8.3 Implications for clinical practice of health professionals

A reasoned argument has been presented throughout this thesis regarding the need for change in clinical practice of health professionals who work with older

adults. The completed studies have presented evidence of the determinants of participation that are not routinely explored in practice or previous research. This inquiry has culminated in four suggested changes in practice when implementing health programmes with older adults following hospitalisation.

Implications for practice to increase participation:

- Screen for *depressive symptoms* and instigate appropriate referrals and/or interventions
- Identify *falls history* over the past 12 months and instigate appropriate referrals and/or interventions
- Screen for *volition* of daily activities that are intended to be incorporated in treatment programmes and choose those with higher personal volition levels
- Identify the client's *personal life approach* through discussion and observations, with instigation of strategies for building optimism and resilience within treatment programmes

8.3.1 Screen for depressive symptoms with appropriate action

Implementation of these recommendations would require the health professional to screen for depressive symptoms and then take appropriate action following identification of potential areas for concern. Interventions may include a referral to an appropriate health professional for diagnosis and/or treatment of identified symptoms. Additionally, simple interventions that have been reported to have a positive impact on depression could also be included by the health professional alongside their standard clinical practice.

The types of interventions to increase participation by decreasing depressive symptoms could incorporate encouraging the individual to utilise support through family/friends/community to counteract social isolation (251); increasing physical activity through exercise - associated with decreased depressive symptoms (252); increasing one's repertoire of leisure activities and interests (e.g. gardening) - associated with decreasing depression (209); using the "three good things in life" approach (writing down three good things that happened today and why – daily for a week) - reported to decrease depression and increase happiness (230); or

daily random acts of kindness (doing something for someone else to brighten their day with no expectation of a return) - reported to increase happiness and life satisfaction (253, 254). Examples of random acts of kindness for strangers may include opening a door for someone, assisting a person to carry their packages, paying the shortfall of a purchase at a checkout for a stranger, writing an inspiring note, or giving someone a meal. The philosophy behind these acts of kindness is to think outside of one's personal experiences and consider others more with warm-hearted compassion (253). This strategy is often paired with writing affirming letters to people in expression of gratitude (253, 254). Researchers have identified a positive improvement in depression that is sustained over time and an increase in the level of personal happiness when putting these simple acts into practice (254). These interventions do not require special training or qualifications but can be learned and implemented by any health care professional.

8.3.2 Identify falls history (previous 12 months) with appropriate action

The second implication for practice is to identify the history of falls over the past 12 months. The individual can provide an indication of any falls they experienced over this time providing they have cognitive awareness. However, clinicians need to be cognisant that recall bias could dilute the accuracy of the responses gained. Those who have fallen in the past year are likely to require appropriate health interventions as they are more susceptible to fear of falling, repeat falls, and/or hospital admissions (19, 22). A referral to the appropriate service, health discipline, or inclusion in falls prevention interventions (that the client has high volition to perform to increase adherence) could be interventions that are incorporated into treatment programmes (255).

8.3.3 Screen for volition of activities and select those with higher levels

The third implication is for health professionals to screen for volition when developing activity treatment programmes. This could lead to individuals choosing relevant activities with higher levels of volition that could be incorporated into their home rehabilitation programmes (106, 193). This could range from physical exercise programmes through to household or recreational activity interventions which have been reported to be associated with increased participation (193). Individuals are more likely to continue their participation over time when they are more motivated to participate in activities, a person-centred

approach and individual choice of activities that hold higher levels of volition (meaning) is provided. The Volition Scale requires further development to become a useful clinical tool. This could be extended to incorporate a range of preferred activities for individual selection in order to increase participation.

8.3.4 Identify the client's *personal life approach* and instigate strategies for building optimism and resilience

The final implication of this research is the need for health professionals to identify the individual's personal life approach and determine whether it is predominantly optimistic or pessimistic. This can be identified through interactions with clients to determine if they are mainly driven by an internal locus of control (where they believe they are able to choose a more optimistic response to adversity) or if they feel powerless and are more driven by external locus of control (circumstances, luck, and other people). Clinicians can influence the way people interpret their current physical and mental health status when identifying their personal life approach (25). This could be instigated through encouraging creative problem-solving techniques, challenging expectations of self and others to elicit change, and challenging negative language by replacing with positive and optimistic words (140). For example encouraging clients to replace "I can't" language with identification of what activities they "**can do**", however small the capacity may seem to the individual (229).

A supporting factor of personal life approach was identified as spirituality and how spiritual beliefs encourage the individual's approach to participation. These beliefs and rituals may connect the individual to experiences, ideas, or people that are sacred and hold meaning regarding their place in the world (214). Acknowledgement and inclusion of these topics in practice interactions (however briefly) can be a positive influence to strengthening the optimistic approach when utilised alongside the standard person-centred treatment programme (222). The individual is more likely to continue with programme recommendations when at home (improving adherence and participation) or after the community programme has ceased. Clinicians can acknowledge and support this approach when working in partnership with the client.

Clinicians are also in a position to briefly discuss the social supports clients may have within their current social networks when exploring their underlying life

philosophy. Social connections were identified in study 5 as a factor that supported participation. Conversely, a lack of support was at times the driver to seek additional interactions through accessing the community more regularly. There are several actions that can be undertaken by health professionals if the participant's social networks are minimal as this can have a negative impact on mood, participation, and health outcomes (256). The interventions could include a referral to an appropriate service (to broker social or leisure activity groups), discussion during treatment sessions regarding possible creative solutions for seeking support, or provision of information regarding access to appropriate services in the community.

These findings align with the existing Occupational Therapy Practice Framework II (257), which describes how the collaboration between the practitioner and the person (client) is inextricably linked. This partnership can potentially enhance participation in meaningful activities within the individual's context and environment. The central *person* component within this framework refers to values, beliefs or attitudes to self, society, and their place within it. It incorporates the physical body as well as organisational, functions and structures, which includes health status and experiences of clinicians. The framework acknowledges the importance of how the cultural beliefs or societal values are determined including how the political, economic, and societal factors impact on the way a person participates within their society. These principles can either be supported or ignored by health professionals during interactions with clients, which is likely to impact (positively or negatively) on their level of participation. Therefore, the principles of collaboration through using a person-centred approach are relevant for all health professionals (regardless of discipline) as they work with clients towards the mandate of optimising health and wellbeing. The findings of the five studies presented in this thesis indicate a change in health practice is therefore warranted.

8.4 Implications for policy

The inclusion of screening for depressive symptoms and volition, discussion of falls history, and identification of the personal life approach, also has future health policy implications. National clinical guidelines for **assessment** of depression in

older persons in Australia have not yet been developed. The current depression guidelines focus on youth, perinatal, and acute/post-traumatic stress disorders (258). Evidence has previously been presented that support the factors of depression and delirium as two vital areas to assess within the older population (150, 259). This is due to the negative impact of depression on physical or cognitive functioning, and relationships, which can lead to ongoing ill-health or mortality (150). Current Australian/New Zealand **intervention** guidelines for psychiatric treatment of depression in older persons are available and focus on medical and cognitive behavioural interventions (237). However, they do not include a recommendation for mandatory screening for depressive symptoms (or for other mental health factors) with older adults in hospital or rehabilitation settings, although this is currently an area of debate (237).

The findings of this thesis suggest that policy reforms may be required in order to address the implications of depressive symptoms amongst older adults. Although the findings report that depressive symptoms are associated with lower levels of participation, the cause of these symptoms is not fully understood. Depression may be caused through wider determinants of health which can include social isolation, financial challenges, limited access to the community or health services, poor health literacy, and unhealthy housing options (239, 260). Guidelines for potential simple interventions to address these factors for health professionals to use within rehabilitation programmes (to positively impact on depressive symptoms) following hospital are also lacking. The role of the allied health professional in screening older adults for the possibility of depressive symptoms in rehabilitation programmes requires further examination. This could determine if mandatory screening followed by appropriate interventions, positively impact participation outcomes or not.

Screening for volition is not integral to local or national clinical guidelines and may be an additional area of inclusion within future health documents for older adults. However additional investigations into the impact on participation with older adults of choosing activities with higher levels of volition following hospitalisation, needs to be carried out prior to any further recommendations in this area.

8.5 Limitations of the completed studies and lessons learned

There are a number of limitations identified throughout these five studies. One of these limitations includes the age of the participants. This was restricted to older adults (70 years and over for the broad research project 1 and 65 years and over for project 2) as a way to promote more homogenous results. The age restriction of the sample group has implications regarding the lack of generalisability of the findings to other populations even though the main findings of these studies may be relevant to other age groups. There were also limitations for studies 2, 3, 4 through being under the umbrella of the 'parent study'. This presented challenges such as; timeframes required for decisions to be made regarding scales to be included, the length of scale and participant burden within the larger study. Data collection was restricted to the method of telephone interviews, and the number of participants was already determined from responses following the parent study. One major flaw in the methodology of the cross-sectional data collection was the lack of gathering volition data for those participants that did not engage in the specified activities. This led to being unable to ascertain if the reason for not taking part was due to a lack of volition or other factors. This could have strengthened the results of the associations between participation and volition further by covering this area of inquiry.

A critique of the Volition Scale throughout the peer review process for publication has included the reverse scoring of the scale. This was proposed (by one reviewer) as being counter-intuitive where a lower score indicated a higher level of volition. This was due to the numbering of the Likert scale from the original scale (The Occupational Questionnaire) on which it was based, which scored from 1 = strongly agree to 5 = strongly disagree. This presents a higher score as less of the required factor (volition) and was addressed within each of the volition studies in the interpretation of results sections. However there are other validated scales currently used in clinical practice and research that have the similar reverse scaling, which does not negate its effectiveness. An example of this is the Sensory Processing Measure where lower scores indicate higher skills levels of ability (261).

A further limitation of the qualitative study was that the quantitative data contained a number of restrictions and did not greatly enhance the information in the published manuscript. Proposed advantages of including quantitative data

(mixed-methods design) was to provide empirical evidence of the link between volition and participation within the context of the personal perspectives from the interviews. A mixed-method approach is effective when data is collected from a large number of participants, with a subset of participants then interviewed. As the collection of quantitative data was not adequate (n=21) to support this design, the design was adapted. The data collection did not use a standardised scale for collection of the participation data which limited the findings. The quantitative analysis was completed for all demographic factors but due to the small number of participants did not greatly enhance the understanding of the qualitative analysis. However, the cohort was adequate for thematic analysis of the narrative data.

The emphasis on psychosocial components impacting participation does not profess to include the panacea to health and wellbeing for older adults, as the determinants of health are broad and complex. These studies have focussed on the psychosocial aspects of participation amongst older adults in an attempt to contribute to the understanding in this area for health professionals. This focus in itself provides a limitation by reducing the moderating factors investigated to the ones discussed without consideration of others. However, the findings do contribute to health practice for clinicians and the advancement of research in the area of participation amongst older adults following hospitalisation.

8.6 Implications for future research

This research has addressed a number of areas regarding the determinants of participation in activities amongst older adults and how these could potentially be addressed through changes in health professional practice. However, there are a number of areas which remain unanswered. These include identifying the impact of depression screening, screening of volition, and self-selection of activities on older adults' participation levels. A three way randomised control intervention study (with 12 month follow-up) could be designed to investigate causality of participation. The interventions could include 1) screening for depressive symptoms - with referral for treatment when indicated; 2) screening for volition - with client selection of appropriate activities with higher levels of volition; and 3) both 1 and 2 interventions. This approach would provide empirical data

(including causality) of these interventions on participation levels of older adults following return home from a stay in hospital.

Additional studies are required to examine effective methods of identifying a client's personal life approach and investigate the impact of simple interventions to increase optimism and resilience, on participation levels amongst older adults. These factors have been associated with participation or identified by the individual as being important enablers of, or barriers to, participation. However empirical evidence to support how these interventions increase participation amongst older adults following hospitalisation is not available. The relationships between falls and participation in specific activities could be further investigated using the understandings of the personal life approach and the Volition Scale. Ongoing research into the application of the personal life approach within a broader selection of daily activities would also be beneficial. This may identify a possible link with; gender specific tasks and longevity, the impact of family encouragement/discouragement on participation, and the role of receiving assistance or support on participation. Research into varied population groups would also be useful (for example immigrant populations, gender differences, and younger adults).

Further research areas to consider include;

- If participation reduces falls in a non-falling population
- The relationship between participation and depression
- The impact of living conditions, gender and depression on participation
- Is reduced participation a risk factor of falling?
- The impact of rehabilitation programmes on participation that address anxiety, with those who have previously fallen
- The development of the volition scale relating to activities that are incorporated into home rehabilitation programmes
- The development of in-hospital and post- hospital reconditioning programmes using participation outcomes as a primary outcome
- Identification and screening for volition related to behaviour change in alternative client groups.

These potential studies provide research opportunities to build on the findings of the five studies reported in this thesis, with implications to further optimise participation and health outcomes in older adults following hospitalisation, as well as other population groups.

8.7 Summary

This thesis has identified four contributing factors that have the potential to increase participation amongst older adults and health professionals should consider in their clinical practice. Empirical evidence has been provided that suggests future health programmes with older adults could incorporate screening for *depressive symptoms*, screening of *volition* levels, identification of *falls history*, and recognition of the *personal life approach*. Health professionals could consider these areas within their ongoing interactions with clients and respond to these appropriately. Health professionals could potentially include the following recommendations subsequent to the screening and assessment processes.

Summary of recommendations to increase participation amongst older adults

- Address the presence of *depressive symptoms* with appropriate referral or treatment including the "simple" interventions which have been shown to decrease depression and increase happiness impacting positively on participation.
- Identify the number of *falls* an individual has experienced over the past 12 months and complete a referral for intervention or treatment at the appropriate service in order to minimise this barrier to ongoing participation.
- Facilitate a choice of appropriate activities that hold a higher level of *volition* for the individual into rehabilitation programmes which is likely to increase participation long-term.
- Identify and discuss the *personal life approach* (optimistic or pessimistic) and support a more optimistic and positive outlook with the individual.

Rehabilitation programmes that address the determinants of participation as identified throughout this thesis, have the potential to promote optimal participation. Efficacious interventions combining these factors could contribute to improving the health and wellbeing of older adults following hospitalisation, decreasing health service burden whilst supporting flourishing mental health and successful ageing.

References

1. Gill DP, Jones G, Zou G, Speechley M. The phone-FITT: A brief physical activity interview for older adults. *Journal of Aging and Physical Activity*. 2008;16(3):292-315.
2. O'Toole G, MacKenzie L, editors. *Occupational analysis in practice*. Oxford: Blackwell Publishing.; 2011.
3. Lamb SE, Jørstad-Stein EC, Hauer K, Becker C, on behalf of the Prevention of Falls Network E, Outcomes Consensus G. Development of a Common Outcome Data Set for Fall Injury Prevention Trials: The Prevention of Falls Network Europe Consensus. *Journal of the American Geriatrics Society*. 2005;53(9):1618-22.
4. Broonen JP, Marty M, Legout V, Cedraschi C, Henrotin Y. Is volition the missing link in the management of low back pain? *Joint Bone Spine*. 2011;78(4):364-7.
5. Townsend EA, Polatajko HJ. *Enabling occupation II: Advancing an occupational therapy vision for health, well-being, & justice through occupation*. Ottawa: Canadian Association of Occupational Therapists.; 2007.
6. Whiteford G. Occupational deprivation: Global challenge in the new millennium. *British Journal of Occupational Therapy*. 2000;63(5):200-4.
7. Kielhofner G. *A model of human occupation: Theory and application* 4th ed. Baltimore, MD: Lippincott Williams & Wilkins 2008.
8. World Health Organisation. *WHO global report on falls prevention in older age*. Switzerland: World Health Organisation., 2007.
9. World Health Organisation. *Towards a Common Language for Functioning, Disability and Health ICF*. 2002.
10. Wagstaff S. Supports and barriers for exercise participation for well elders: Implications for occupational therapy. *Physical and Occupational Therapy in Geriatrics*. 2005;24(2):19-33.
11. Lutz W, Sanderson W, Scherbov S. The coming acceleration of global population ageing. *Nature*. 2008;451(7179):716-9.
12. Sibbritt DW, Byles JE, Regan C. Factors associated with decline in physical functional health in a cohort of older women. *Age and Ageing*. 2007;36(4):382-8.
13. Gill TM, Kurland B. The burden and patterns of disability in activities of daily living among community-living older persons. *Journals of Gerontology - Series A Biological Sciences and Medical Sciences*. 2003;58(1):70-5.
14. National Institute on Aging National Institutes of Health. *Global Health and Aging*. United States: World Health Organisation, 2011.
15. Christensen K, Doblhammer G, Rau R, Vaupel JW. Ageing populations: the challenges ahead. *The Lancet*. 2009;374(9696):1196-208.

16. Courtney MD, Edwards HE, Chang AM, Parker AW, Finlayson K, Bradbury C, et al. Improved functional ability and independence in activities of daily living for older adults at high risk of hospital readmission: A randomized controlled trial. *J Eval Clin Pract.* 2012;18(1):128-34.
17. Courtney MD, Edwards HE, Chang AM, Parker AW, Finlayson K, Hamilton K. A randomised controlled trial to prevent hospital readmissions and loss of functional ability in high risk older adults: A study protocol. *BMC Health Services Research.* 2011;11.
18. Norton R, Butler M, Robinson E, Lee-Joe T, Campbell AJ. Declines in physical functioning attributable to hip fracture among older people. A follow-up study of case-control participants. *Disability and Rehabilitation.* 2000;22(8):345-51.
19. Mahoney J, Sager M, Dunham NC, Johnson J. Risk of falls after hospital discharge. *Journal of the American Geriatrics Society.* 1994;42(3):269-74.
20. Alexander BH, Rivara FP, Wolf ME. The cost and frequency of hospitalization for fall-related injuries in older adults. *American Journal of Public Health.* 1992;82(7):1020-3.
21. Campbell AJ, Robertson MC. Rethinking individual and community fall prevention strategies: A meta-regression comparing single and multifactorial interventions. *Age and Ageing.* 2007;36(6):656-62.
22. Shumway-Cook A, Ciol MA, Gruber W, Robinson C. Incidence of and risk factors for falls following hip fracture in community-dwelling older adults. *Physical Therapy.* 2005;85(7):648-55.
23. Barker A, Brand C, Haines T, Hill K, Brauer S, Jolley D, et al. The 6-PACK programme to decrease fall-related injuries in acute hospitals: protocol for a cluster randomised controlled trial. *Injury prevention : journal of the International Society for Child and Adolescent Injury Prevention.* 2011;17(4).
24. Day L, Finch CF, Hill KD, Haines TP, Clemson L, Thomas M, et al. A protocol for evidence-based targeting and evaluation of statewide strategies for preventing falls among community-dwelling older people in Victoria, Australia. *Injury Prevention.* 2011;17(2):1-8.
25. Pritchard E, Warren N, Barker A, Brown T, Haines T. Enablers of, and barriers to participation from an older adults' perspective post-hospitalization. *Gerontologist.* 2014;(under review).
26. Australian Institute of Health Welfare. Trends in hospitalisations due to falls by older people, Australia 1999-00 to 2010-11. Australia: Australian Government, 2013.
27. National Council of Ageing. Falls prevention: Fact sheet. Washington, DC: National Council of Ageing, 2014.
28. Silcock D, Sinclair D. The cost of our ageing society. London: International Longevity Centre, 2012 December. Report No.
29. Brand CA, Sundararajan V. A 10-year cohort study of the burden and risk of in-hospital falls and fractures using routinely collected hospital data. *Quality and Safety in Health Care.* 2010;19(6).
30. Hill K, Womer M, Russell M, Blackberry I, McGann A. Fear of falling in older fallers presenting at emergency departments. *Journal of Advanced Nursing.* 2010;66(8):1769-79.

31. Pritchard E, Barker A, Day L, Clemson L, Brown T, Haines T. Factors impacting the household and recreation participation of older adults living in the community. *Disability and Rehabilitation*. 2014;1-8.
32. Deshpande N, Metter EJ, Lauretani F, Bandinelli S, Guralnik J, Ferrucci L. Activity restriction induced by fear of falling and objective and subjective measures of physical function: A prospective cohort study. *Journal of the American Geriatrics Society*. 2008;56(4):615-20.
33. Jopp DS, Hertzog C. Assessing Adult Leisure Activities: An Extension of a Self-Report Activity Questionnaire. *Psychological Assessment*. 2010;22(1):108-20.
34. Freiburger E, Häberle L, Spirduso WW, Zijlstra GAR. Long-term effects of three multicomponent exercise interventions on physical performance and fall-related psychological outcomes in community-dwelling older adults: A randomized controlled trial. *Journal of the American Geriatrics Society*. 2012;60(3):437-46.
35. Ballinger C, Clemson L. Older People's Views about Community Falls Prevention: an Australian Perspective. *The British Journal of Occupational Therapy*. 2006;69(6):263-70.
36. Kortebein P. Rehabilitation for hospital-associated deconditioning. *American Journal of Physical Medicine and Rehabilitation*. 2009;88(1):66-77.
37. Courtney M, Edwards H, Chang A, Parker A, Finlayson K, Hamilton K. Fewer emergency readmissions and better quality of life for older adults at risk of hospital readmission: A randomized controlled trial to determine the effectiveness of a 24-week exercise and telephone follow-up program. *Journal of the American Geriatrics Society*. 2009;57(3):395-402.
38. Carlson MC, Saczynski JS, Rebok GW, Seeman T, Glass TA, McGill S, et al. Exploring the Effects of an "Everyday" Activity Program on Executive Function and Memory in Older Adults: Experience Corps®. *Gerontologist*. 2008;48(6):793-801.
39. Stevens-Ratchford RG. Longstanding occupation: The relation of the continuity and meaning of productive occupation to life satisfaction and successful aging. *Activities, Adaptation and Aging*. 2011;35(2):131-50.
40. Department of Economic and Social Affairs Population Division. *World Population Ageing: 1950-2050*. United Nations, 2002.
41. Australian Institute of Health and Welfare. *Australian hospital statistics 2010–11*. Health Services Series no.43. Cat. no. HSE 117. Canberra: AIHW: 2012.
42. The Health and Social Care Information Centre National Health Service. *Hospital episode statistics online*. United Kingdom, 2011; Available from: <http://www.hesonline.nhs.uk/Ease/servlet/ContentServer?siteID=1937>.
43. Overview statistics for hospital inpatient stay [database on the Internet]. Agency for Healthcare Research and Quality, . 2009. Available from: www.hcup-us.ahrq.gov/reports/factsandfigures/2007/section1_TOC.jsp.
44. Banks J. *Health costs and policy*. ANU, Canberra: Menzies Centre for Health Policy, John Curtin School of Medical Research, 2008 26 June. Report No.
45. Wiener JM, Tilly J. Population ageing in the United States of America: Implications for public programmes. *International Journal of Epidemiology*. 2002;31(4):776-81.

46. Hemmingsson H, Jonsson H. An occupational perspective on the concept of participation in the International Classification of Functioning, Disability and Health - Some critical remarks. *American Journal of Occupational Therapy*. 2005;59(5):569-76.
47. World Health Organization. *International Classification of Functioning, Disability and Health*. Geneva: Author; 2001.
48. World Health Organisation. *Towards a Common Language for Functioning, Disability and Health ICF*. World Health Organisation, 2002.
49. Dijkers MP. Issues in the conceptualization and measurement of participation: An overview. *Archives of Physical Medicine and Rehabilitation*. 2010;91(9 SUPPL.):S5-S16.
50. Heinemann AW, Magasi S, Bode RK, Hammel J, Whiteneck GG, Bogner J, et al. Measuring enfranchisement: Importance of and control over participation by people with disabilities. *Archives of Physical Medicine and Rehabilitation*. 2013;94(11):2157-65.
51. Turpin M, Iwama M. *Using occupational therapy models in practice. A field guide*. Toronto: Churchill Livingstone; 2011.
52. Law M. Participation in the occupations of everyday life. *American Journal of Occupational Therapy*. 2002;56(6):640-9.
53. Wilcock AA. *An occupational perspective of health*. New Jersey, USA: Slack; 1998.
54. Clark F, Azen SP, Zemke R, Jackson J, Carlson M, Mandel D, et al. Occupational therapy for independent-living older adults: A randomized controlled trial. *Journal of the American Medical Association*. 1997;278(16):1321-6.
55. Clark F, Jackson J, Carlson M, Chou CP, Cherry BJ, Jordan-Marsh M, et al. Effectiveness of a lifestyle intervention in promoting the well-being of independently living older people: Results of the Well Elderly 2 Randomised Controlled Trial. *Journal of Epidemiology and Community Health*. 2012;66(9):782-90.
56. Jackson J, Carlson M, Mandel D, Zemke R, Clark F. Occupation in Lifestyle Redesign: The Well Elderly Study Occupational Therapy Program. *American Journal of Occupational Therapy*. 1998;52(5):326-36.
57. Hammel J, Magasi S, Heinemann A, Whiteneck G, Bogner J, Rodriguez E. What does participation mean? An insider perspective from people with disabilities. *Disability and Rehabilitation*. 2008;30(19):1445-60.
58. Molineux M, editor. *Occupation for occupational therapists*: Oxford, UK ; Malden, MA : Blackwell Pub; 2009.
59. Fairhall N, Sherrington C, Clemson L, Cameron ID. Do exercise interventions designed to prevent falls affect participation in life roles? A systematic review and meta-analysis. *Age & Ageing*. 2011;40(6):666-74.
60. Yerxa EJ, Clark F, Frank G, Jackson J, Parham D, Pierce D, et al. An introduction of occupational science, a foundation for occupational therapy in the 21st century. *Occupational Therapy in Health Care*. 1989;6(4):1-17.
61. Mahoney FI, Barthel DW. FUNCTIONAL EVALUATION: THE BARTHEL INDEX. *Maryland state medical journal*. 1965;14:61-5.

62. Clark MS, Bond MS. The Adelaide Activities Profile: A measure of the life-style activities of elderly people. *Aging Clinical and Experimental Research*. 1995;7(4):174-84.
63. Wade DT, Legh-Smith J, Hewer RL. Social activities after stroke: Measurement and natural history using the Frenchay Activities Index. *International Rehabilitation Medicine*. 1985;7(4):176-81.
64. Washburn RA, Smith KW, Jette AM, Janney CA. The Physical Activity Scale for the Elderly (PASE): Development and evaluation. *Journal of Clinical Epidemiology*. 1993;46(2):153-62.
65. Wilcock AA. The relationship between occupational balance and health: A pilot study. *Occupational Therapy International*. 1997;4(1):17-30.
66. Hammel J, Jones R, Gossett A, Morgan E. Examining barriers and supports to community living and participation after a stroke from a participatory action research approach. *Topics in Stroke Rehabilitation*. 2006;13(3):43-58.
67. Gillespie LD, Robertson CM, Gillespie WJ, Sherrington C, Gates S, Clemson LM, et al. Interventions for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*. 2012(9).
68. Christiansen C, Townsend E. *Introduction to occupation : The art and science of living : New multidisciplinary perspectives for understanding human occupation as a central feature of individual experience and social organization*. 2nd ed: Upper Saddle River, N.J. : Pearson 2010.
69. Sager MA, Rudberg MA. Functional decline associated with hospitalization for acute illness. *Clinics in geriatric medicine*. 1998;14(4):669-79.
70. Mahoney J, Palta M, Johnson J, Jalaluddin M, Gray S, Park S, et al. Temporal association between hospitalization and rate of falls after discharge. *Archives of Internal Medicine*. 2000;160(18):2788-95.
71. Hill A-M, Hoffmann T, Beer C, McPhail S, Hill KD, Oliver D, et al. Falls after discharge from hospital: is there a gap between older peoples' knowledge about falls prevention strategies and the research evidence? *Gerontologist*. 2011;51(5):653-62.
72. Cheal B, Clemson L. Older people enhancing self-efficacy in fall-risk situations. *Australian Occupational Therapy Journal*. 2001;48(2):80-91.
73. Lloyd BD, Williamson DA, Singh NA, Hansen RD, Diamond TH, Finnegan TP, et al. Recurrent and injurious falls in the year following hip fracture: A prospective study of incidence and risk factors from the sarcopenia and hip fracture study. *Journals of Gerontology - Series A Biological Sciences and Medical Sciences*. 2009;64(5):599-609.
74. Haines TP, Russell T, Brauer SG, Erwin S, Lane P, Urry S, et al. Effectiveness of a video-based exercise programme to reduce falls and improve health-related quality of life among older adults discharged from hospital: A pilot randomized controlled trial. *Clinical Rehabilitation*. 2009;23(11):973-85.
75. Lannin NA, Clemson L, McCluskey A, Lin CW, Cameron ID, Barras S. Feasibility and results of a randomised pilot-study of pre-discharge occupational therapy home visits. *BMC health services research*. 2007;7:42.

76. Udell JE, Drahota A, Dean TP, Sander R, Mackenzie H. Interventions for preventing falls in older people: an overview of Cochrane Reviews. 2011; 4:[Available from: <http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=coch&NEWS=N&AN=00075320-100000000-07478>].
77. Gillespie LD, Robertson MC, Gillespie WJ, Lamb SE, Gates S, Cumming RG, et al. Interventions for preventing falls in older people living in the community. Cochrane Database of Systematic Reviews. 2009(2).
78. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JPA, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. Italian Journal of Public Health. 2009;6(4):354-91.
79. Maher CG, Sherrington C, Herbert RD, Moseley AM, Elkins M. Reliability of the PEDro scale for rating quality of randomized controlled trials. Physical Therapy. 2003;83(8):713-21.
80. Higgins JP, Altman DG, Gøtzsche PC, Jüni P, Moher D, Oxman AD, et al. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. BMJ (Clinical research ed). 2011;343.
81. Cochrane Collaboration. The Cochrane Collaboration open learning material. 2002; Available from: <http://www.cochrane-net.org/openlearning/html/mod0.htm>.
82. Zidén L, Kreuter M, Frändin K. Long-term effects of home rehabilitation after hip fracture -- 1-year follow-up of functioning, balance confidence, and health-related quality of life in elderly people. Disabil Rehabil. 2010;32(1):18-32.
83. von Koch L, de Pedro-Cuesta J, Kostulas V, Almazan J, Widen Holmqvist L. Randomized controlled trial of rehabilitation at home after stroke: one-year follow-up of patient outcome, resource use and cost. Cerebrovascular Diseases. 2001;12(2):131-8.
84. Latham N, Anderson C, Lee A, Bennett D, Moseley A, Cameron I. A randomized, controlled trial of quadriceps resistance exercise and vitamin D in frail older people: the Frailty Interventions Trial in Elderly Subjects (FITNESS). Journal - American Geriatrics Society. 2003;51(3):291-9.
85. Ziden L, Frandin K, Kreuter M. Home rehabilitation after hip fracture a randomized controlled study on balance confidence, physical function and everyday activities. Clinical Rehabilitation. 2008;22(12):1019-33.
86. Clemson L, Fiatarone Singh MA, Bundy A, Cumming RG, Manollaras K, O'Loughlin P, et al. Integration of balance and strength training into daily life activity to reduce rate of falls in older people (the LiFE study): Randomised parallel trial. BMJ (Online). 2012;345(7870).
87. Schäfer W, Kroneman M, Boerma W, van den Berg M, Westert G, Devillé W, et al. The Netherlands: Health system review. Health Systems in Transition. 2010;12(1):1-229.
88. Anell A, Glenngård A, Merkur S. Sweden: Health system review. Health Systems in Transition. 2012;14(5):1-159.

89. Dwyer J, Eager K. Options for reform of Commonwealth and State governance responsibilities for the Australian health system. Commissioned paper for the National Health and Hospitals Reform Commission; 2008.
90. Hendriks MR, Bleijlevens MH, van Haastregt JC, Crebolder HF, Diederiks JP, Evers SM, et al. Lack of effectiveness of a multidisciplinary fall-prevention program in elderly people at risk: a randomized, controlled trial. *Journal of the American Geriatrics Society* [Internet]. 2008; (8):[1390-7 pp.].
91. Haines TP, Russell T, Brauer SG, Erwin S, Lane P, Urry S, et al. Effectiveness of a video-based exercise programme to reduce falls and improve health-related quality of life among older adults discharged from hospital: a pilot randomized controlled trial. *Clinical rehabilitation* [Internet]. 2009; (11):[973-85 pp.].
92. Forkan R, Pumper B, Smyth N, Wirkkala H, Ciol M, Shumway-Cook A. Exercise adherence following physical therapy intervention in older adults with impaired balance. *Physical Therapy*. 2006;86(3):401-10.
93. Simek EM, McPhate L, Haines TP. Adherence to and efficacy of home exercise programs to prevent falls: A systematic review and meta-analysis of the impact of exercise program characteristics. *Preventive Medicine*. 2012;55(4):262-75.
94. Vogler CM, Menant JC, Sherrington C, Ogle SJ, Lord SR. Evidence of detraining after 12-week home-based exercise programs designed to reduce fall-risk factors in older people recently discharged from hospital. *Archives of Physical Medicine and Rehabilitation*. 2012;93(10):1685-91.
95. Sherrington C, Tiedemann A, Fairhall N, Close JC, Lord SR. Exercise to prevent falls in older adults: an updated meta-analysis and best practice recommendations. *New South Wales public health bulletin*. 2011;22(3-4):78-83.
96. Venable E, Hanson C, Shechtman O, Dasler P. The effects of exercise on occupational functioning in the well elderly. *Physical and Occupational Therapy in Geriatrics*. 2000;17(4):29-42.
97. Australian Government. Public and Private Hospitals In the Healthcare System. Australian Government: Productivity Commission; 2009.
98. Sluijs E, van Dulmen S, van Dijk L, de Ridder D, Heerdink R, Bensing J. Patient adherence to medical treatment: A meta review. ZonMw - the Netherlands Organization for Health Research and Development.; 2006.
99. Kirkland RA, Karlin NJ, Megan BS, Pulos S. Basic psychological needs satisfaction, motivation, and exercise in older adults. *Activities, Adaptation and Aging*. 2011;35(3):181-96.
100. Brass M, Lynn MT, Demanet J, Rigoni D. Imaging volition: What the brain can tell us about the will. *Experimental Brain Research* Mar. 2013(Pagination):No Pagination Specified.
101. Deci EL, Ryan RM. The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*. 1985;19(2):109-34.
102. Bandura A. Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*. 1977;84(2):191-215.

103. Koring M, Richert J, Parschau L, Ernsting A, Lippke S, Schwarzer R. A combined planning and self-efficacy intervention to promote physical activity: A multiple mediation analysis. *Psychology, Health and Medicine*. 2012;17(4):488-98.
104. Jack K, McLean SM, Moffett JK, Gardiner E. Barriers to treatment adherence in physiotherapy outpatient clinics: A systematic review. *Manual Therapy*. 2010;15(3):220-8.
105. Nilsson I, Bernspång B, Fisher AC, Gustafson Y, Löfgren B. Occupational engagement and life satisfaction in the oldest-old: The Umeå 85+ study. *OTJR Occupation, Participation and Health*. 2007;27(4):131-9.
106. Eakman A, Carlson M, Clark F. The meaningful activity participation assessment: A measure of engagement in personally valued activities. *International Journal of Aging and Human Development*. 2010;70(4):299-317.
107. Steger MF, Kashdan TB, Sullivan BA, Lorentz D. Understanding the search for meaning in life: Personality, cognitive style, and the dynamic between seeking and experiencing meaning. *Journal of Personality*. 2008;76(2):199-228.
108. Schueller SM, Seligman MEP. Pursuit of pleasure, engagement, and meaning: Relationships to subjective and objective measures of well-being. *Journal of Positive Psychology*. 2010;5(4):253-63.
109. Valiant G. *Aging well*. Boston: Little Brown; 2002.
110. Chern JS. The volitional questionnaire: Psychometric development and practical use. *American Journal of Occupational Therapy*. 1996;50(7):516-25.
111. Kuhl J. The volitional basis of personality systems interaction theory: Applications in learning and treatment contexts. *International Journal of Educational Research*. 2000;33(7-8):665-703.
112. Mendes De Leon CF, Seeman TE, Baker DI, Richardson ED, Tinetti ME. Self-efficacy, physical decline, and change in functioning in community-living elders: A prospective study. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*. 1996;51(4):S183-S90.
113. McAuley E, Mullen SP, Szabo AN, White SM, Wójcicki TR, Mailey EL, et al. Self-regulatory processes and exercise adherence in older adults: Executive function and self-efficacy effects. *American Journal of Preventive Medicine*. 2011;41(3):284-90.
114. Stevens-Ratchford RG. Occupational engagement: Motivation for older adult participation. *Topics in Geriatric Rehabilitation*. 2005;21(3):171-81.
115. Forsyth K, Kielhofner G. *Model of Human Occupation Ergoterapeuten*. 2003;11.
116. Pritchard E, Brown T, Barker A, Haines T. Exploring the association between volition and participation in daily life activities with older adults, living in the community. *Clinical Rehabilitation*. 2014(In press):1-8.
117. Smith NR, Kielhofner G, Watts JH. The relationships between volition, activity pattern, and life satisfaction in the elderly. *The American Journal of Occupational Therapy: official publication of the American Occupational Therapy Association*. 1986;40(4):278-83.
118. Yazdani F, Jibril M, Kielhofner G. A study of the relationship between variables from the model of human occupation and subjective well-being among

- university students in Jordan. *Occupational Therapy in Health Care*. 2008;22(2-3):125-38.
119. Raber C, Teitelman J, Watts J, Kielhofner G. A phenomenological study of volition in everyday occupations of older people with dementia. *British Journal of Occupational Therapy*. 2010;73(11):498-506.
120. Helfrich C, Kielhofner G, Mattingly C. Volition as narrative: understanding motivation in chronic illness. *The American journal of occupational therapy* : official publication of the American Occupational Therapy Association. 1994;48(4):311-7.
121. de las Heras CG, Geist R, Kielhofner G, Li Y. The volitional questionnaire (VQ) Version 4.1. University of Illinois at Chicago; 2007.
122. Pan AW, Fan CW, Chung L, Chen TJ, Kielhofner G, Wu MY, et al. Examining the validity of the model of human occupation screening tool: Using classical test theory and item response theory. *British Journal of Occupational Therapy*. 2011;74(1):34-40.
123. Ågren KA, Kjellberg A. Utilization and content validity of the Swedish version of the Volitional Questionnaire (VQ-S). *Occupational Therapy in Health Care*. 2008;22(2-3):163-76.
124. Basu S, Kafkes A, Schatz R, Kiraly A, Kielhofner G. The Pediatric Volitional Questionnaire (PVQ) Version 2.1. University of Illinois at Chicago: MOHO Clearinghouse; 2008.
125. Watts JH, Kielhofner G, Bauer DF, Gregory MD, Valentine DB. The assessment of occupational functioning: a screening tool for use in long-term care. *The American journal of occupational therapy* : official publication of the American Occupational Therapy Association. 1986;40(4):231-40.
126. Brollier C, Hawkins Watts J, Bauer D, Schmidt W. A content validity study of the assessment of occupational functioning. *Occupational Therapy in Mental Health*. 1988;8(4):29-47.
127. Henry AD, Baron KB, Mouradian L, Curtin C. Reliability and validity of the self-assessment of occupational functioning. *American Journal of Occupational Therapy*. 1999;53(5):482-8.
128. Viik MK, Watts JH, Madigan MJ, Bauer D. Preliminary validation of the assessment of occupational functioning with an alcoholic population. *Occupational Therapy in Mental Health*. 1990;10(2):19-33.
129. Parkinson S, Forsyth K, Kielhofner G. The Model of Human Occupation Screening Tool (MOHOST) Version 2.0. University of Illinois at Chicago: MOHO Clearinghouse; 2006.
130. Forsyth K, Parkinson S, Kielhofner G, Kramer J, Mann L, Duncan E. The measurement properties of the model of human occupation screening tool and implications for practice. *New Zealand Journal of Occupational Therapy*. 2011;58(2):5-13.
131. Kuhl J, Fuhrmann A. Decomposing self-regulation and self-control: The volitional components checklist. In: Heckhausen J, Dweck CS, editors. *Life-span perspectives on motivation and control*. New York: Cambridge University Press; 1998.

132. Kellmann M, Kallus KW. The Recovery-Stress Questionnaire for Athletes: User Manual. Europe: Human Kinetics Europe, Limited; 2001.
133. Forstmeier S, Rüdell H. Measuring Volitional Competences: Psychometric Properties of a Short Form of the Volitional Components Questionnaire (VCQ) in a Clinical Sample The Open Psychology Journal 2008;1:66-77.
134. Nielsen-Prohl J, Saliger J, GüldenberG V, Breier G, Karbe H. Stress-stimulated volitional coping competencies and depression in multiple sclerosis. Journal of Psychosomatic Research. 2013;74(3):221-6.
135. Beckmann J, Kellmann M. Self-regulation and recovery: Approaching an understanding of the process of recovery from stress. Psychological Reports. 2004;95(3 II):1135-53.
136. Forhan M, Law M, Vrkljan BH, Taylor VH. Participation profile of adults with class III obesity. OTJR Occupation, Participation and Health. 2011;31(3):135-42.
137. Forhan M, Backman C. Exploring occupational balance in adults with rheumatoid arthritis. OTJR Occupation, Participation and Health. 2010;30(3):133-41.
138. Widen-Holmqvist L, De Pedro-Cuesta J, Holm M, Sandstrom B, Hellblom A, Stawiarz L, et al. Stroke rehabilitation in Stockholm. Basis for late intervention in patients living at home. Scandinavian Journal of Rehabilitation Medicine. 1993;25(4):173-81.
139. Gates S, Fisher JD, Cooke MW, Carter YH, Lamb SE. Multifactorial assessment and targeted intervention for preventing falls and injuries among older people in community and emergency care settings: Systematic review and meta-analysis. British Medical Journal. 2008;336(7636):130-3.
140. Bowling A, Iliffe S. Psychological approach to successful ageing predicts future quality of life in older adults. Health and Quality of Life Outcomes. 2011;9.
141. Boehm JK, Lyubomirsky S, Sheldon KM. A longitudinal experimental study comparing the effectiveness of happiness-enhancing strategies in Anglo Americans and Asian Americans. Cognition and Emotion. 2011;25(7):1263-72.
142. Sheldon KM, Lyubomirsky S. Change your actions, not your circumstances: An experimental test of the sustainable happiness model. Edward Elgar Publishing Ltd.; 2009. p. 324-42.
143. Vogler C, Sherrington C, Ogle S, Lord S. Reducing risk of falling in older people discharged from hospital: a randomized controlled trial comparing seated exercises, weight-bearing exercises, and social visits. Archives of Physical Medicine and Rehabilitation. 2009;90(8):1317-24.
144. Haines TP, Day L, Hill KD, Clemson L, Finch C. "Better for others than for me": A belief that should shape our efforts to promote participation in falls prevention strategies. Archives of Gerontology and Geriatrics. 2014;59(1):136-44.
145. Ware J, Kosinski M, Turner-Bowker D, Sundaram M, Gandek B, Maruish M. SF-12v2 Health Survey: Administration Guide for Clinical Trial Investigators. Lincoln, RI: QualityMetric Incorporated, 2009.
146. D'Ath P, Katona P, Mullan E, Evans S, Katona C. Screening, detection and management of depression in elderly primary care attenders - I: The acceptability and performance of the 15 item Geriatric Depression Scale (GDS15) and the development of short versions. Family Practice. 1994;11(3):260-6.

147. Pritchard E, Brown T, Barker A, Haines T. Examining construct validity of the Volition Scale using the Rasch measurement model. 2014;(under review).
148. Ware Jr JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Medical Care*. 1992;30(6):473-83.
149. De Smedt D, Clays E, Doyle F, Kotseva K, Prugger C, Pajak A, et al. Validity and reliability of three commonly used quality of life measures in a large European population of coronary heart disease patients. *International Journal of Cardiology*. 2012.
150. Fiske A, Wetherell JL, Gatz M. Depression in older adults. *Annual Review of Clinical Psychology* 2009;5:363-89.
151. Brazier JE, Harper R, Jones NMB, O'Cathain A, Thomas KJ, Usherwood T, et al. Validating the SF-36 health survey questionnaire: New outcome measure for primary care. *British Medical Journal*. 1992;305(6846):160-4.
152. Mitchell AJ, Bird V, Rizzo M, Meader N. Diagnostic validity and added value of the geriatric depression scale for depression in primary care: A meta analysis of GDS30 and GDS 15. *Journal of Affective Disorders*. 2010;125(1-3):10-7.
153. Likert R. A Technique for the Measurement of Attitudes. *Archives of Psychology*. 1932;140: 1–55.
154. Katzman R, Brown T, Fuld P, Peck A, Schechter R, Schimmel H. Validation of a short orientation-memory-concentration test of congestive impairment. *American Journal of Psychiatry*. 1983;140(6):734-9.
155. Learmonth YC, Paul L, Miller L, Mattison P, McFadyen AK. The effects of a 12-week leisure centre-based, group exercise intervention for people moderately affected with multiple sclerosis: A randomized controlled pilot study. *Clinical Rehabilitation*. 2012;26(7):579-93.
156. StataCorp. *Stata 11 Base Reference Manual*. College Station, TX: Stata Press; 2009.
157. Tranmer M, Elliot M. *Multiple Linear Regression*. UK: Cathie Marsh Centre for Census and Survey Research, 2008.
158. Tukey JW. *Exploratory Data Analysis*. Reading, MA: Addison-Wesley; 1977.
159. DePoy E, Gitlin L. *Introduction to Research*. 2nd ed. United States: Mosby; 1998.
160. Rasch G. An item analysis which takes individual differences into account. *The British Journal of Mathematical and Statistical Psychology*. 1966;19(1):49-57.
161. Embretson SE, Reise S. *Item response theory for psychologists*. Mahwah, NJ: Lawrence Erlbaum; 2000.
162. Furr MR, Bacharach VR. *Psychometrics: An Introduction*. Thousand Oaks, US: SAGE; 2008.
163. Bond TG, Fox CM. *Applying the Rasch Model: Fundamental measurement in the human sciences*. 2nd ed. Mahwah: New Jersey: Lawrence Erlbaum Associates 2007.
164. Linacre JM. *Facets computer program for many-facet Rasch measurement, version 3.71.2*. Beaverton, Oregon: Winsteps.com; 2013.

165. Spearman C. The proof and measurement of association between two things. *The American Journal of Psychology*. 1987;100(3-4):441-71.
166. Braun V, Clarke V. *Successful qualitative research: A practical guide for beginners*. Croydon, UK: Sage; 2013.
167. Hill K, Schwarz J, Kalogeropoulos A, Gibson S. Fear of falling revisited. *Archives of Physical Medicine and Rehabilitation*. 1996;77(10):1025-9.
168. Wijnhuizen GJ, Chorus AMJ, Hopman-Rock M. Fragility, fear of falling, physical activity and falls among older persons: Some theoretical considerations to interpret mediation. *Prev Med*. 2008;46(6):612-4.
169. Tinetti ME, Richman D, Powell L. Falls efficacy as a measure of fear of falling. *Journals of Gerontology*. 1990;45(6):P239-P43.
170. QSR International Pty Ltd. NVivo qualitative data analysis software. V 9 ed2010.
171. Meier P. Mind-mapping a tool for eliciting and representing knowledge held by diverse informants. *Social research update [Internet]*. 2007; 52(Autumn):[1-4 pp.]. Available from: <http://sru.soc.surrey.ac.uk/SRU52.pdf>.
172. Hussein A. The use of Triangulation in Social Sciences Research: Can qualitative and quantitative methods be combined? *Journal of Comparative Social Work*. 2009;1(8):1-12.
173. Creswell J, Plano Clark V. *Designing and conducting mixed methods research*. 2nd ed. California, US: Sage; 2011.
174. Law M, Steinwender S, Leclair L. Occupation, health and well-being. *Canadian Journal of Occupational Therapy*. 1998;65(2):81-91.
175. Lord S, Sherrington C, Menz H, J. C. *Falls in older people*. 2nd ed. Cambridge: Cambridge University Press; 2007.
176. Ashe MC, Eng JJ, Miller WC, Soon JA. Disparity between physical capacity and participation in seniors with chronic disease. *Medicine and Science in Sports and Exercise*. 2007;39(7):1139-46.
177. Gilmour H. Social participation and the health and well-being of Canadian seniors. *Health Reports*. 2012;23(4):3-12.
178. Koeneman MA, Verheijden MW, Chinapaw MJM, Hopman-Rock M. Determinants of physical activity and exercise in healthy older adults: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*. 2011;8.
179. Ball V, Corr S, Knight J, Lowis MJ. An investigation into the leisure occupations of older adults. *British Journal of Occupational Therapy*. 2007;70(9):393-400.
180. Iwarsson S, Horstmann V, Carlsson G, Oswald F, Wahl HW. Person-environment fit predicts falls in older adults better than the consideration of environmental hazards only. *Clinical Rehabilitation*. 2009;23(6):558-67.
181. Hauer K, Lamb SE, Jorstad EC, Todd C, Becker C. Systematic review of definitions and methods of measuring falls in randomised controlled fall prevention trials. *Age and Ageing*. 2006;35(1):5-10.
182. Glantz SA, Slinker BK. *Primer of Applied Regression and Analysis of Variance*. New York: McGraw-Hill; 1990.

183. Stata 11 Base Reference Manual [database on the Internet]. Stata Press. 2009.
184. Shapiro SS, Wilk MB. An analysis of variance test for normality (complete samples). *Biometrika* 1965;52 (3-4):591–611.
185. Tukey JW. *Exploratory Data Analysis*. . Reading, MA: Addison-Wesley.; 1977.
186. Wang L, Van Belle G, Kukull WB, Larson EB. Predictors of functional change: A longitudinal study of nondemented people aged 65 and older. *Journal of the American Geriatrics Society*. 2002;50(9):1525-34.
187. Iwasa H, Yoshida Y, Kumagai S, Ihara K, Yoshida H, Suzuki T. Depression status as a reliable predictor of functional decline among Japanese community-dwelling older adults: A 12-year population-based prospective cohort study. *International Journal of Geriatric Psychiatry*. 2009;24(11):1192-200.
188. Pierluissi E, Mehta KM, Kirby KA, Boscardin WJ, Fortinsky RH, Palmer RM, et al. Depressive symptoms after hospitalization in older adults: Function and mortality outcomes. *Journal of the American Geriatrics Society*. 2012;60(12):2254-62.
189. Barker AL, Nitz JC, Low Choy NL, Haines TP. Mobility has a non-linear association with falls risk among people in residential aged care: An observational study. *Journal of Physiotherapy*. 2012;58(2):117-25.
190. Pereira CLN, Baptista F, Infante P. Role of physical activity in the occurrence of falls and fall-related injuries in community-dwelling adults over 50 years old. *Disability and Rehabilitation*. 2013;0(0):1-8.
191. Gautam R, Saito T, Kai I. Leisure and religious activity participation and mental health: Gender analysis of older adults in Nepal. *BMC Public Health*. 2007;7:1-11.
192. Chalé-Rush A, Guralnik JM, Walkup MP, Miller ME, Rejeski WJ, Katula JA, et al. Relationship between physical functioning and physical activity in the lifestyle interventions and independence for elders pilot. *Journal of the American Geriatrics Society*. 2010;58(10):1918-24.
193. Pritchard E, Brown T, Barker A, Haines T. Exploring the association between volition and participation in daily life activities with older adults, living in the community. *Clinical Rehabilitation*. 2014;in press.
194. Brown T. Construct validity: A unitary concept for occupational therapy assessment and measurement. *Hong Kong Journal of Occupational Therapy*. 2010;20(1):30-42.
195. Law M, MacDermid J, editors. *Evidenced-based rehabilitation: A guide to practice*. 2nd ed. Thorofare, NJ: Slack; 2008.
196. Marais I, Andrich D. RUMMss. Rasch Unidimensional Measurement Models Simulation Studies Software. Perth: The University of Western Australia, Perth; 2007.
197. Weng LJ. Impact of the number of response categories and anchor labels on coefficient alpha and test-retest reliability. *Educational and Psychological Measurement*. 2004;64(6):956-72.
198. Lozano LM, García-Cueto E, Muñiz J. Effect of the number of response categories on the reliability and validity of rating scales. *Methodology*. 2008;4(2):73-9.

199. Nyman SR, Victor CR. Older people's participation in and engagement with falls prevention interventions in community settings: An augment to the cochrane systematic review. *Age and Ageing*. 2011;41(1):16-23.
200. Dugow H, Connolly D. Exploring impact of independent living programme on activity participation of elderly people with chronic conditions. *International Journal of Therapy and Rehabilitation*. 2012;19(3):154-62.
201. Pritchard E, Brown T, Lalor A, Haines T. The impact of falls prevention on participation in daily occupations of older adults following discharge: a systematic review and meta-analysis. *Disability and Rehabilitation* 2013(online):1-10.
202. Ajzen I. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*. 1991;50(2):179-211.
203. Armitage CJ, Conner M. Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*. 2001;40(4):471-99.
204. Taylor D, Bury M, Campling N, Carter S, Garfied S, Newbould J, et al. A Review of the use of the Health Belief Model (HBM), the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB) and the Trans-Theoretical Model (TTM) to study and predict health related behaviour change. In: London Uo, editor.: National Institute for Health and Clinical Excellence; 2007.
205. Manstead ASR. The benefits of a critical stance: A reflection on past papers on the theories of reasoned action and planned behaviour. *British Journal of Social Psychology*. 2011;50(3):366-73.
206. Pritchard E, Barker A, Day L, Brown T, Clemson L, Haines T. Factors impacting the household and recreation participation of older adults living in the community. *Disability and Rehabilitation*. 2014;online.
207. Clemson L, Singh MF, Bundy A, Cumming RG, Weisell E, Munro J, et al. LIFE Pilot Study: A randomised trial of balance and strength training embedded in daily life activity to reduce falls in older adults. *Australian Occupational Therapy Journal*. 2010;57(1):42-50.
208. McCallum J, Simons LA, Simons J, Friedlander Y. Delaying dementia and nursing home placement: The Dubbo study of elderly Australians over a 14-year follow-up. In: Weller, Rattan, editors. 2007. p. 121-9.
209. Park SA, Shoemaker CA, Haub MD. Physical and psychological health conditions of older adults classified as gardeners or nongardeners. *HortScience*. 2009;44(1):206-10.
210. Chen TY, Janke MC. Gardening as a potential activity to reduce falls in older adults. *Journal of aging and physical activity*. 2012;20(1):15-31.
211. Li W, Keegan THM, Sternfeld B, Sidney S, Quesenberry Jr CP, Kelsey JL. Outdoor falls among middle-aged and older adults: A neglected public health problem. *American Journal of Public Health*. 2006;96(7):1192-200.
212. Kelsey JL, Procter-Gray E, Hannan MT, Li W. Heterogeneity of falls among older adults: implications for public health prevention. *American Journal of Public Health*. 2012;102(11):2149-56.
213. Wilcock AA. Occupational science: Bridging occupation and health. *Canadian Journal of Occupational Therapy*. 2005;72(1):5-12.

214. Levasseur M, Desrosiers J, Tribble DSC. Subjective quality-of-life predictors for older adults with physical disabilities. *American Journal of Physical Medicine and Rehabilitation*. 2008;87(10):830-41.
215. Rosenberg DE, Huang DL, Simonovich SD, Belza B. Outdoor built environment barriers and facilitators to activity among midlife and older adults with mobility disabilities. *Gerontologist*. 2013;53(2):268-79.
216. Eyres L, Unsworth CA. Occupational therapy in acute hospitals: The effectiveness of a pilot program to maintain occupational performance in older clients. *Australian Occupational Therapy Journal*. 2005;52(3):218-24.
217. Suto MJ. Leisure participation and well-being of immigrant women in Canada. *Journal of Occupational Science*. 2013;20(1):48-61.
218. Brott T, Hocking C, Paddy A. Occupational disruption: Living with motor neurone disease. *British Journal of Occupational Therapy*. 2007;70(1):24-31.
219. Creswell J. *Research Design. Qualitative, quantitative, and mixed methods approaches* 2nd ed. California, US: Sage 2003.
220. Windsor TD, Burns RA, Byles JE. Age, physical functioning, and affect in midlife and older adulthood. *J Gerontol Ser B Psychol Sci Soc Sci*. 2013;68(3):395-9.
221. Faircloth CA, Boylstein C, Rittman M, Young ME, Gubrium J. Sudden illness and biographical flow in narratives of stroke recovery. *Sociology of Health and Illness*. 2004;26(2):242-61.
222. Unantenne N, Warren N, Canaway R, Manderson L. The Strength to Cope: Spirituality and Faith in Chronic Disease. *J Relig Health*. 2013;52(4):1147-61.
223. Romo RD, Wallhagen MI, Yourman L, Yeung CC, Eng C, Micco G, et al. Perceptions of successful aging among diverse elders with late-life disability. *Gerontologist*. 2013;53(6):939-49.
224. Forgeard MJC, Seligman MEP. Seeing the glass half full: A review of the causes and consequences of optimism. *Prat Psychol*. 2012;18(2):107-20.
225. Ferreira VM, Sherman AM. The relationship of optimism, pain and social support to well-being in older adults with osteoarthritis. *Aging Ment Health*. 2007;11(1):89-98.
226. Rotter JB. Generalized expectancies for internal versus external control of reinforcement. *Psychological monographs*. 1966;80(1):1-28.
227. Stewart TL, Chipperfield JG, Perry RP, Weiner B. Attributing illness to 'old age:' Consequences of a self-directed stereotype for health and mortality. *Psychology and Health*. 2012;27(8):881-97.
228. Krause N. Chronic strain, locus of control, and distress in older adults. *Psychology and aging*. 1987;2(4):375-82.
229. Wolinsky FD, Vander Weg MW, Martin R, Unverzagt FW, Willis SL, Marsiske M, et al. Does cognitive training improve internal locus of control among older adults? *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*. 2010;65 B(5):591-8.
230. Seligman ME, Steen TA, Park N, Peterson C. Positive psychology progress: empirical validation of interventions. *The American psychologist*. 2005;60(5):410-21.

231. Stigler SM. Francis Galton's Account of the Invention of Correlation. *Statistical Science*. 1989;4(2):72-9.
232. Wilcoxon F. Individual comparison by ranking methods. *Biometrics*. 1945;1:80- 3.
233. Motulsky H. *Analyzing Data with GraphPad Prism*. San Diego, CA: GraphPad Software Inc. San Diego, CA; 1999 [15.05.14]; Available from: <http://avesbiodiv.mncn.csic.es/estadistica/ANOVA/ANOVA%20-%20GraphPad.pdf>.
234. Scheibe S, Carstensen LL. Emotional aging: Recent findings and future trends. *J Gerontol Ser B Psychol Sci Soc Sci*. 2010;65 B(2):135-44.
235. O'Donoghue T, Punch K. *Qualitative Educational Research in Action: Doing and Reflecting*; Routledge; 2003.
236. Clark FA, Jackson J, Carlson M. Occupational science, occupation therapy and evidence-based practice: what the well elderly study taught us. In: Molineux M, editor. *Occupation for occupational therapists*. Oxford, UK. : Malden, MA : Blackwell Publishing; 2009.
237. Ellis P, Hickie I, Bushnell J, Hirini P, Stevens S, Smith DAR. Australian and New Zealand clinical practice guidelines for the treatment of depression. *Australian and New Zealand Journal of Psychiatry*. 2004;38(6):389-407.
238. DiMatteo MR, Lepper HS, Croghan TW. Depression is a risk factor for noncompliance with medical treatment meta-analysis of the effects of anxiety and depression on patient adherence. *Archives of Internal Medicine*. 2000;160(14):2101-7.
239. Australian Institute of Health Welfare. *National Health priority areas*. Australia: Australian Government, 2013.
240. World Health Organisation. *Depression*. World Health Organisation, 2014.
241. Huppert F, So T. *What percentage of people in Europe are flourishing and what characterises them?* . UK: The Wellbeing Insitute, 2010.
242. National Health and Medical Research Council. *Guidelines for clinical practice*. In: National Health and Medical Research Council, editor. Australia: Australian Government; 2014.
243. Stevens JA, Corso PS, Finkelstein EA, Miller TR. The costs of fatal and non-fatal falls among older adults. *Injury Prevention*. 2006;12(5):290-5.
244. Tinetti ME, Gordon C, Sogolow E, Lapin P, Bradley EH. Fall-risk evaluation and management: Challenges in adopting geriatric care practices. *Gerontologist*. 2006;46(6):717-25.
245. Koh SSL, Manias E, Hutchinson AM, Donath S, Johnston L. Nurses' perceived barriers to the implementation of a Fall Prevention Clinical Practice Guideline in Singapore hospitals. *BMC Health Services Research*. 2008;8.
246. Gillespie LD, Robertson MC, Gillespie WJ, Sherrington C, Gates S, Clemson LM, et al. Interventions for preventing falls in older people living in the community. *Cochrane database of systematic reviews (Online)*. 2012;9.

247. Child S, Goodwin V, Garside R, Jones-Hughes T, Boddy K, Stein K. Factors influencing the implementation of fall-prevention programmes: A systematic review and synthesis of qualitative studies. *Implementation Science*. 2012;7(1).
248. National Health and Medical Research Council. Clinical guidelines for stroke rehabilitation and recovery In: Foundation NS, editor.: Australian Government; 2005.
249. Van Dulmen SA, Lukersmith S, Muxlow J, Santa Mina E, Nijhuis-van der Sanden MW, van der Wees PJ. Supporting a person-centred approach in clinical guidelines. A position paper of the Allied Health Community - Guidelines International Network (G-I-N). *Health Expectations*. 2013.
250. Weiner B. An Attributional Theory of Achievement Motivation and Emotion. *Psychological Review*. 1985;92(4):548-73.
251. Stevens-Ratchford R, Cebulak BJ. Living well with arthritis: A study of engagement in social occupations and successful aging. *Physical and Occupational Therapy in Geriatrics*. 2004;22(4):31-52.
252. Mead GE, Morley W, Campbell P, Greig CA, McMurdo M, Lawlor DA. Exercise for depression. *Cochrane Database of Systematic Reviews*. 2009(3).
253. Lyubomirsky S, Layous K. How Do Simple Positive Activities Increase Well-Being? *Current Directions in Psychological Science*. 2013;22(1):57-62.
254. Layous K, Lee H, Choi I, Lyubomirsky S. Culture Matters When Designing a Successful Happiness-Increasing Activity: A Comparison of the United States and South Korea. *Journal of Cross-Cultural Psychology*. 2013;44(8):1294-303.
255. McInnes E, Askie L. Evidence review on older people's views and experiences of falls prevention strategies. *Worldviews on evidence-based nursing / Sigma Theta Tau International, Honor Society of Nursing*. 2004;1(1):20-37.
256. Everard KM, Lach HW, Fisher EB, Baum MC. Relationship of activity and social support to the functional health of older adults. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*. 2000;55(4):S208-S12.
257. American Association of Occupational Therapists. *Occupational Therapy Practice Framework*. 2nd ed. USA: American Association of Occupational Therapists; 2008.
258. Beyondblue. Clinical practice guidelines. Australia: Beyondblue; 2014; Available from: <http://www.beyondblue.org.au/resources/health-professionals/clinical-practice-guidelines>.
259. Brown EL, Raue P, Halpert KD, Adams S, Titler MG. Evidence-based guideline: Detection of depression in older adults with dementia. *Journal of Gerontological Nursing*. 2009;35(2):11-5.
260. Tong HM, Lai DWL, Zeng Q, Xu WY. Effects of Social Exclusion on Depressive Symptoms: Elderly Chinese Living Alone in Shanghai, China. *Journal of Cross-Cultural Gerontology*. 2011;26(4):349-64.
261. Parham D, Ecker C. *Sensory Processing Measure*. CA: Western Psychological Services; 2010.
262. Pritchard E, Brown T, Barker A, Haines T. Examining the construct validity of the Volition Scale (VoS) with community-dwelling older adults using the Rasch Measurement Model. *British Journal of Occupational Therapy*. 2014;(under review).

9 Appendices

Appendix 1.1

Canadian Model of Occupational Performance and Engagement – permission to use diagram.



Canadian Association of Occupational Therapists
Association canadienne des ergothérapeutes

CAOT Publications ACE Copyright Request

May 13 2014

Elizabeth Pritchard
Occupational Therapist
Monash University
Melbourne Australia

Dear Elizabeth

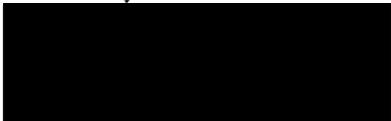
According to your request, you would like permission to reproduce the figure CMOP-E diagram to be used in your thesis "Engaging and achieving in later life: The role of occupational participation and volition with older adults, following discharge from hospital.

Figure 1.3 A (CMOP-E) Canadian Model of Occupational Performance in Polatajko H., Townsend E., Craik J. (2007). *Enabling Occupation II: Advancing an Occupational Therapy Vision for Health, Well-Being, & Justice through Occupation*. Ottawa, On, CAOT Publication ACE P. 23.

Permission for the above is granted on a one time basis only and provided that you acknowledge the source. Please ensure that a full reference required with the permission of CAOT Publications ACE. You also have permission to published you thesis on the University website as long as it is a password protected website. This does not include the right for uses other than the above-mentioned, future uses, or any electronic publishing.

Please be advised that since this request is for education purposes CAOT will waive the fee.

Thank you



Stephane Rochon
CAOT Publications Administrator

Appendix 1.2:

Components of Model of Human Occupation – Copyright permission

Tripathi, Pooja (ELS-CON) <p.tripathi@elsevier.com>
to me

14 May (1 day ago) ☆ ↶ -



Dear Ms Pritchard,

Using occupational therapy models in practice, 9780723434948, Turpin 2010.

As per your letter dated 04 May 2014, we hereby grant you permission to reprint the aforementioned material at no charge in your thesis, in print and on the Monash University website subject to the following conditions:

1. If any part of the material to be used (for example, figures) has appeared in our publication with credit or acknowledgement to another source, permission must also be sought from that source. If such permission is not obtained then that material may not be included in your publication/copies.
2. Suitable acknowledgment to the source must be made, either as a footnote or in a reference list at the end of your publication, as follows:
"This article was published in Publication title, Vol number, Author(s), Title of article, Page Nos, Copyright Elsevier (or appropriate Society name) (Year)."
3. Your thesis may be submitted to your institution in either print or electronic form.
4. Reproduction of this material is confined to the purpose for which permission is hereby given.
5. This permission is granted for non-exclusive world English rights only. For other languages please reapply separately for each one required. Permission excludes use in an electronic form other than as specified above. Should you have a specific electronic project in mind please reapply for permission.
6. Should your thesis be published commercially, please reapply for permission.

Kind regards,
Pooja

Pooja Tripathi
Rights Associate | ELSEVIER | The Boulevard | Langford Lane | Kidlington | Oxford OX5 1GB |

Appendix 1.3

Participation measurement tools identified by Fairhall et al, 2011

N. Fairhall et al.

Table 2. ICF categories and concepts represented in the instruments that met the criteria for measuring participation

Instrument	ICF chapters in the activities and participation domain							Concept captured			
	Communication	Mobility	Self care	Domestic life	Interpersonal interactions and relationships	Major life areas	Community, social and civic life	Frequency	Degree of independence	Degree of difficulty	Degree of limitation
Adelaide Activities Profile [42]		✓		✓	✓	✓	✓	✓			
Falls Handicap Inventory [37]		✓	✓	✓	✓		✓	✓		✓	✓
Frenchay Activities Index [38]		✓		✓	✓	✓	✓	✓			
The Groningen Activity Restriction Scale [39]		✓	✓	✓					✓	✓	
Late Life Function and Disability Instrument ^a [45]	✓	✓	✓	✓		✓	✓	✓			✓
Lawton Instrumental Activities of Daily Living Scale [41]		✓	✓	✓		✓			✓		
Nottingham Extended Activities of Daily Living Index [44]		✓	✓	✓	✓	✓	✓		✓	✓	
Older Americans Resources and Services ^b [43]	✓	✓	✓	✓		✓			✓		
Physical Activity Scale for the Elderly [40]		✓		✓		✓	✓	✓			

^aDisability component.

^bActivities of daily living and Instrumental Activities of Daily Living Scale.

REVIEW ARTICLE

The impact of falls prevention on participation in daily occupations of older adults following discharge: a systematic review and meta-analysis

E. Pritchard^{1,2}, T. Brown², A. Lalor^{1,3}, and T. Haines^{1,3}

¹Department of Physiotherapy and ²Department of Occupational Therapy, Monash University, Melbourne, VIC, Australia, and ³Allied Health Research Unit, Monash Health, VIC, Australia

Abstract

Purpose: To investigate the impact of falls intervention programmes on participation of older adults returning home to live, following discharge from hospital. **Method:** A systematic review of peer-reviewed articles and grey literature was completed. Limits were set for articles published in English, dated 1990–2012. **Inclusion criteria** included randomised control trials with older adults (≥ 65 years) that used an effective falls intervention and a participation measure, following discharge from hospital or emergency department. Two independent researchers assessed the studies for eligibility. **Research risk of bias** was evaluated using the PEDro scale (range 1–10). A meta-analysis of the selected articles was completed. **Results:** Five studies fulfilled the inclusion criteria and measured participation outcomes short-term (< six months post-discharge, $n = 488$) and long-term (6–12 months post-discharge, $n = 571$). The results indicated that falls interventions provided a positive improvement in patients' participation level ($p = 0.042$, $p = 0.026$). However, the effect size was small at 0.20 and 0.21. **Conclusions:** The meta-analysis findings indicate that there is a causal association between falls interventions and participation in daily occupations with older adults post-discharge. Although the effect size was small, practice implications of this study suggest that participation needs to be considered in future falls prevention research.

Keywords

Activities of daily living, elderly, fall, participation, post-discharge

History

Received 20 March 2013
Revised 7 June 2013
Accepted 10 June 2013
Published online 18 July 2013

► Implications for Rehabilitation

- Falls interventions for older adults following discharge home from hospital, increase participation in life situations to a small extent.
- Health professionals can include a focus on falls prevention programmes with older adults to promote participation.

Introduction

Health conditions and acute health events become more frequent with aging, and may necessitate a stay in hospital [1]. Recent publications have identified that older adults comprise 38% of hospital admissions in Australia (2011) [2], 37% in the United Kingdom (2011) [3] and 33% in the United States (2007) [4]. Hospitalisation creates a *disruption* to everyday routines, roles, habits and abilities due to the confinement as people give up some of their individuality to assume the role of being a "patient" [5–7]. *Disruption* can be defined as a "temporary or transient state of prolonged preclusion from engagement in occupations", referring to all daily activities including self-care, productivity (e.g. paid employment, volunteer work, household

management) and leisure which also incorporates social participation [6,8]. If disruption is long-term, this can lead to negative health outcomes including cognitive or physical decline [9], and further hospitalisations [1,10].

Falls are a significant consequence of hospitalisation for older adults [11], with the incidence of 4.52/1000 person days [12] in the six months following hospitalisation. Falls and disruption to everyday occupations (particularly through hospitalisation) are likely to be inter-related outcomes causing physical injury and/or psychological harm (e.g. fear of falling) [13,14]. These outcomes may inhibit participation in daily occupations at home and in the community and can lead to further physical and psychological decline, including functional mobility limitations or depression [15]. This can contribute to de-conditioning, thereby increasing future risk of falls [1]. Both of these negative outcomes have shared risk factors which are likely to co-exist, impacting reliance on services and overall health and wellbeing [14,16].

Efforts to improve post-hospitalisation outcomes have tended to focus on one primary outcome at a time. For example, Haines et al. [17] investigated the effect of an exercise programme for the prevention of falls during the post-discharge period.

Address for correspondence: Elizabeth Pritchard, Department of Physiotherapy and Occupational Therapy, School of Primary Health Care, Faculty of Medicine Nursing and Health Sciences, Monash University – Peninsula Campus, McMahon Road, Frankston, Victoria 3199, Australia.
[REDACTED]

Appendix 1.5

Search terms used for systematic review (refined as at 27.02.2012)

Population	AND Intervention	AND Outcome
elderly	fall* prevention (fall, falls)	activities
older	fall* program*	function*(functioning, functional, functioned)
geriatric*	fall* intervention*	abilit* (ability, abilities)
ageing	OR	occupation* (occupations, occupational)
age* (ageing, aged)		participation
“over 65”	_____	performance
AND	fall* (falling, fallen, falls) – this is a condition not an intervention, but needed to clarify the below therapy interventions	independen* (independence, independent, independently)
discharge* (discharged)		selfcare
“post discharge”	AND	activities of daily living
“post hospital”	occupational therapy	recreation
“after hospital”	physiotherapy	play
“post hospitali?ation” (‘s’ or ‘z’)	rehabilitation	leisure
“post rehabilitation”	physical activity	work
AND	restorat* (restoration, restorative)	employment
community dwelling	recovery	productivity
home		sociali?ation (‘s’ and ‘z’)
		values
		interest* (interests)
		emotional health
		causation
		functional mobility
		household management
		community management
		personal care
		enable* (enabled, enables, enablement)

		volition "fear of falling"
--	--	-------------------------------

Appendix 2.1

The Occupational Questionnaire (125)

OCCUPATIONAL QUESTIONNAIRE

Developed by N. Riopel Smith with assistance from G. Kielhofner and J. Hawkins Watts (1986).¹

INSTRUCTIONS:

In this questionnaire you will be asked to record your usual daily activities, and to answer some questions about these activities.

PART ONE:

Please think about how you have been spending your days the past few weeks. Try to decide what you do on a usual weekday (Monday - Friday). Using the worksheet that begins below, record your activities from the time you wake up. Each row represents a half hour. For each half hour record the main activity that you would be doing during that half hour. An activity can be anything from talking to a friend, to cooking, to bathing. If you do an activity for longer than a half hour, write it down again for as long as you continue to do that activity.

PART TWO:

After you have listed your activities, answer all four of the questions for each activity by circling the number of the most appropriate answer. Notice that the questions ask you to consider whether your activities are work, daily living tasks, recreation, or rest, and to consider how well you do the activities, how important they are to you, and how much you enjoy them. In the first question, work does not necessarily mean that you are paid for the activity. Work can include productive activities that are useful to other people, like volunteering at a hospital. Daily living tasks are activities that are related to your own self care, such as housekeeping and shopping. Rest includes taking a nap and not doing anything in particular. Even if a question does not seem appropriate for some of your activities, please try to respond to each one as accurately as possible. Your answers to every question are important!

¹ This instrument was first published in: Smith, N.R., Kielhofner, G., & Watts, J.H. (1986). The relationships between volition, activity pattern, and life satisfaction in the elderly. *American Journal of Occupational Therapy*, 40, 278-283.

OCCUPATIONAL QUESTIONNAIRE

Developed by N. Riopel Smith with assistance from G. Kielhofner and J. Hawkins Watts (1986).

Today's date _____

Name _____

Age _____

TYPICAL ACTIVITIES	QUESTION 1	QUESTION 2	QUESTION 3	QUESTION 4
For the half hour beginning at:	I consider this activity to be: 1 - work 2 - daily living work 3 - recreation 4 - rest	I think that I do this: 1 - Very well 2 - Well 3 - About average 4 - Poorly 5 - Very poorly	For me this activity is: 1 - Extremely important 2 - Important 3 - Take it or leave it 4 - Rather not do it 5 - Total waste of time	How much do you enjoy this activity: 1 - Like it very much 2 - Like it 3 - Neither like it nor dislike it 4 - Dislike it 5 - Strongly dislike it
5:00 am	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5:30	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
6:00	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
6:30	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
7:00	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
7:30	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
8:00	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
8:30	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
9:00	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
9:30	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
10:00	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
10:30	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11:00	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
11:30	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
12:00	1 2 3 4	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Appendix 2.2 a

Presentations at the Australia/NZ Falls Prevention Conference 2012, the NZ Association of Occupational Therapists Conference 2012, and the Australian Occupational Therapy Conference 2013.

Dear Ms Pritchard

Thank you for your abstract submission for the 5th Biennial Australian & New Zealand Falls Prevention Conference, being held from 28-30 October 2012 at the Adelaide Convention Centre, South

We are pleased to confirm the inclusion of your abstract/s in the program as detailed below.

Abstract details

Title: Falls and occupational participation in the post discharge elderly population
Paper Status:

Accepted

Presentation Type: Poster presentation
Theme: Translating research into practice
Authors: Elizabeth K Pritchard (Y)
Terrence Haines (N)
Ted Brown (N)
Y (Yes) / N (No)
indicates presenting author

Title: Falls interventions and participation in the post-discharge population: Are they related?
Paper Status:

Accepted

Presentation Type: 5x5 Oral Presentation
Theme: Developing skills, knowledge and capacity in the workforce
Authors: Elizabeth K Pritchard (Y)
Terrence Haines (N)
Ted Brown (N)
Y (Yes) / N (No)
indicates presenting author

Further details regarding your presentation and/or poster details such as date, time and session will be notified in early August 2012.

CONFIRMATION OF PRESENTATION - DUE 27 JULY 2012

Please respond to this e-mail by 27 July 2012 to confirm your participation.

If one of your co-authors will give this presentation/show your poster, please provide their full contact details in your reply.

If you do not wish to accept this offer of a presentation and need to withdraw your submission, please also let us know by return email immediately.

REGISTRATION - DUE 27 JULY 2012

In order to be included in the program and have your abstract included in the abstracts volume, you must register for the meeting (including payment of registration fee) by 27 July 2012.

Please register via the Author Page using this link:
https://ei.im.com.au/ei/cm_esp?id=630&pageid=3FH0V6989
and log in with your Access Key: 3HP8M68TE

Click on the "register for conference" link on the top menu - this will take you directly to your existing entry in the database where you may enter your registration details.

AUDIOVISUAL REQUIREMENTS

The conference will provide data projection facilities with single screens in all session rooms.

If you have any requirements over and above computer projection, or will be using a Macintosh based presentation, please notify the Project Manager by 28 September 2012.

If you have any questions please contact the Project Manager, Brylee McFarlane, at [REDACTED]

We look forward to receiving your confirmation and your participation in the meeting.

Yours sincerely

ANZFPS Conference 2012
28-30 October 2012
Adelaide Convention Centre

Appendix 2.2 b

NZ Association of Occupational Therapists conference 2012

Ref: 60

Elizabeth Rowland
PhD Candidate
Monash University
MELBOURNE

Dear Elizabeth

The organising committee for the 2012 NZAOT Conference, **Maramatanga Hou**, is very pleased to inform you that the following abstract/s has been approved for inclusion in the conference programme.

This letter confirms your presentation and all details will be printed on the website, registration brochure and conference handbook. Please notify [REDACTED] of any changes by 16 March, otherwise all details will be taken as confirmation of acceptance.

Please read the details below about your confirmed presentation:

Presentation details

Paper Details	
Title:	Understanding occupational participation post-discharge in adults 65 years and over and how this relates to falls interventions.
Paper Status:	Accepted
Presentation Type:	Presentation - Research (qualitative) 15min + 5min Q&A
Session Details:	2pm - 3.30pm Thursday 20 September
Theme:	A. People's occupational development
Authors:	Elizabeth Rowland Member NZAOT NZ OTReg.

As per the guidelines for abstracts the organising committee is unable to subsidise or otherwise fund registration fees, travel, accommodation etc. All presenters must be registered to attend the conference and pay the registration fee. Presenters may choose to attend only the day of their presentation and in this case they will only be required to pay the day registration fee. Should you only be attending to present your presentation please advise [REDACTED]

Accommodation options will be available when registrations open. Following are the registration fees:

Appendix 2.2 c

Presentation at the National Occupational Therapy Conference 2013



Acceptance Long Oral

Thank you for your recent submission to the Occupational Therapy Australia 25th National Conference and Exhibition, 24 – 26 July 2013 to be held in Adelaide.

We are pleased to advise that your submission 221 "Participation and falls interventions in the post-discharge population: A systematic review and meta-analysis." has been accepted as a **Long Oral Presentation**.

Long Oral presentations will be 17 minutes allowing 12 minutes for the presentation and 5 minutes to answer questions from the floor.

Further information on the date, time and guidelines for your Long Oral presentation will be emailed shortly.

Please confirm your acceptance of the invitation to present by 6 March 2013 via return email. Failure to respond by this date may result in withdrawal of this offer and removal from the program. The full scientific program will be published on the Conference website in April.

Note: Your abstract will be linked to the program on the Conference website, published in the Wiley Abstract Book and may appear on the SmartPhone app.

You must also register and pay for the conference by **1 May 2013** to confirm your participation. Further details on registration will be emailed shortly.

We look forward to welcoming you to the Occupational Therapy Australia 25th National Conference and Exhibition, 24 - 26 July 2013 at the Adelaide Convention Centre.

Kind Regards

Associate Professor Tammy Hoffmann
Conference Scientific Program Committee Chair
Occupational Therapy Australia National Conference and Exhibition 2013

Appendix 2.2 d

Presentation of study 3 at the Victorian Allied Health Conference March 2014



Victorian Allied Health Research Conference 2014

Friday 28 March 2014
Melbourne Convention and Exhibition Centre

Dear Elizabeth Pritchard

Thank you for submitting an abstract for presentation at the Victorian Allied Health Research Conference (VAHRC) on 28 March 2014.

Congratulations, your abstract submission, ***Examining the construct validity of the Volition Scale (VoS) with community-dwelling older adults using the Rasch Measurement Model***, has been selected by the Scientific Committee for an **oral presentation** in the **From efficacy to effectiveness** session.

Your presentations will be made in concurrent session 1, currently scheduled for 10:50AM. The presentation screens at the conference are all widescreen (16:9 ratio). To utilise the entire screen, we encourage PowerPoint slides to be prepared as such. 16:9 ratio can be selected in 'page setup' under the design tab in 2007/2010 MS PowerPoint.

PowerPoint Presentations (.PPT or .PPTX) to accompany oral presentations are due to the conference organisers [REDACTED] by TUESDAY 18 MARCH 2014. Abstract presenters are required to register for the conference. Note: Early bird registration closes on 9 March 2014. <http://www.vahrc.com.au/start-registration/delegate>.

For information or assistance, contact Shannon at events@thelaunchbox.com.au

On behalf of the Scientific Committee, we look forward to seeing you at the conference.

Kind Regards

Kathleen Philip
Chief Allied Health Advisor of Victoria

Appendix 2.2.e

Presentation of overall constructs at the World Federation of Occupational Therapists Congress June 2014.

16th WFOT/48th JOTC Abstract Submission Office <wfot-office@mas-sys.com>
to me, wfot2014 ▾

Dear Ms Elizabeth Pritchard,

To confirm further details to the previous announcement, please find the details of acceptance indicated below:

Proposal ID: 200485

Title: 'Occupational Participation Framework for Older Adults': A framework for engaging older adults in occupations following hospitalisation.

Accepted Category: Poster

Session Date: 2014.06.21

Please kindly be noted that the session details are subject to change. Program overview will be updated on the official website (wfot.org/wfot2014) shortly.

We are looking forward to hearing from your confirmation soon.

Sincerely yours,

WFOT Congress 2014 Scientific Program Committee

Appendix 3.1

Authority to use the online scoring for SF-12 v2

Dear Elizabeth,

Understanding your Student License:

Your license includes:

- Access to the SF-12v2 4-week recall survey
- Maximum of 200 survey administrations
- Administration Guide
- Certified Scoring Software 4.0™ (see description below)

Scoring Software 4.0™:

Your software scores 8 domains and 2 Summary measures which include:

1. Physical Functioning (PF)
2. Role-Physical (RP)
3. Bodily Pain (BP)
4. General Health (GH)
5. Vitality (VT)
6. Social Functioning (SF)
7. Role-Emotional (RE)
8. Mental Health (MH)
9. Two Summary Measure Scales - The eight health domain scores can be reduced to two summary measures scales without substantial loss of information (MCS (Mental Health Component Scale) and PCS (Physical Component Scale).

Important facts about the software

- Download link and Activation Key are valid for one download on one computer only - if second copy is required, contact sales representative dikopec@qualitymetric.com
- Usage cannot be transferred to another computer once downloaded
- There is no limit on the software
- You will receive an Activation Key that is pre-loaded with the scoring credits needed for this specific project. This key can not be used for any other projects. It will expire when the pre-loaded scoring credits are used. Your order is scheduled to be pre-loaded with 200 scoring credits for the SF-12v2 Health Survey. The number of scoring credits is based upon the number of survey administrations are to be licensed for under this project.
- Once a data record is entered, a scoring credit is deducted from the overall total of 200 and can not be reset. (Please NOTE: If you enter test data or edit and re-enter data or enter a bad record, this also is considered a data record by the software and a scoring credit will be deducted from the overall total.)
- If you run out of credits, you may purchase an new Activation Key with additional credits. Please contact sales representative dikopec@qualitymetric.com for pricing.

The following add-on feature has been included in your Scoring Software 4.0:

• **Missing Score Estimation (Required and cannot be removed from quote)**

With our Certified Scoring Software, our Missing Score Estimation module uses proven scoring algorithms to score datasets and identify any errors that may impact the scoring process or interpretation of results. The scoring service provides Missing Score Estimation (MSE), which incorporates algorithms for calculating scores for partially completed surveys. These algorithms utilize solutions based on Item Response Theory and Regression methods to estimate the most accurate scale and summary measure score when item responses are missing. These MSE algorithms are too complex to document in user manuals and have been conveniently programmed into software to ensure the accuracy of scoring scales and summary measures with partially completed surveys.

Confirming License:

Please follow the instructions below to execute the license agreement. Once the signed license agreement is received we will respond with an invoice.

Instructions:

1. Sign the first page of the license agreement.
 2. Have your educator sign and fill out the highlighted areas on the Acknowledgement by Educator Form.
 3. Return the entire signed agreement (all pages) AND Acknowledgement by Educator Form by fax at [401-542-3249](tel:401-542-3249) or email a scanned copy to me at dikopec@qualitymetric.com.
- **Please note that you will not be licensed and no materials will be sent unless both the license agreement and Acknowledgement by Educator Forms are returned completed.

Note: It is not necessary to mail the signed licensed agreement if you fax it. A fax copy is considered a legal copy.

Cancellation: The licensee is obligated to follow the payment terms upon execution of the signed license agreement. We reserve the right to cancel the license agreement within 60 days from the date issued if we do not receive payment. If we cancel the license agreement, the licensee will be required to complete another license application if they wish to move forward. Please also note that there is no pricing guarantee, and current licensing fees will be applicable.

Changes to the license agreement: If revisions are need to any part of the license please notify me by email at dikopec@qualitymetric.com. License agreements sent in with charges not approved by QualityMetric will not be accepted.

Dana Kopeck
Administrator
QualityMetric Incorporated, now part of OptumInsight
Fax: [401-534-6601](tel:401-534-6601)

QualityMetric is now part of OptumInsight. Our parent company United Health Group recently unified all health services businesses under the brand Optum. OptumInsight (formerly Ingenti) is one of Optum's three business segments. OptumInsight uses technology, information, analytics, and consulting to help clients make better decisions and experience better results.

Appendix 3.2

Short Form-12 version 2

SF-12® Health Survey

This survey asks for your views about your health. This information will help you keep track of how you feel and how well you are able to do your usual activities.

Answer every question by selecting the answer as indicated. If you are unsure about how to answer a question, please give the best answer you can.

1. In general, would you say your health is:

- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Excellent | Very good | Good | Fair | Poor |
| <input type="radio"/> |

2. 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?

- | | | |
|--------------------------|-----------------------------|------------------------------|
| Yes,
limited
a lot | Yes,
limited
a little | No, not
limited
at all |
|--------------------------|-----------------------------|------------------------------|

- | | | | |
|---|-----------------------|-----------------------|-----------------------|
| a <u>Moderate activities</u> , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b Climbing <u>several</u> flights of stairs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

3. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

- | | |
|-----|----|
| Yes | No |
|-----|----|

- | | | |
|---|-----------------------|-----------------------|
| a <u>Accomplished less</u> than you would like | <input type="radio"/> | <input type="radio"/> |
| b Were limited in the <u>kind</u> of work or other activities | <input type="radio"/> | <input type="radio"/> |

4. During the past 4 weeks, 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)?

Yes No

- a Accomplished less than you would like
- b Did work or other activities less carefully than usual

5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all A little bit Moderately Quite a bit Extremely

6. 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...

		A		A	
All	Most	good	Some	little	None
of the	of the	bit of	of the	of the	of the
time	time	the	time	time	time
		time			

- a Have you felt calm and peaceful?
- b Did you have a lot of energy?
- c Have you felt downhearted and blue?

7. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

All of the Most of the Some of the A little of the None of the

time time time time time

Thank you for completing these questions!

Score the survey

Reset the survey form

Appendix 3.3

The Short Geriatric Depression Scale (GDS15) (146)

Choose the best answer for how you have felt over the past week:

1. Are you basically satisfied with your life? YES / **NO**
2. Have you dropped many of your activities and interests? **YES** / NO
3. Do you feel that your life is empty? **YES** / NO
4. Do you often get bored? **YES** / NO
5. Are you in good spirits most of the time? YES / **NO**
6. Are you afraid that something bad is going to happen to you? **YES** / NO
7. Do you feel happy most of the time? YES / **NO**
8. Do you often feel helpless? **YES** / NO
9. Do you prefer to stay at home, rather than going out and doing new things?
YES / NO
10. Do you feel you have more problems with memory than most? **YES** / NO
11. Do you think it is wonderful to be alive now? YES / **NO**
12. Do you feel pretty worthless the way you are now? **YES** / NO
13. Do you feel full of energy? YES / **NO**
14. Do you feel that your situation is hopeless? **YES** / NO
15. Do you think that most people are better off than you are? **YES** / NO

Answers in bold indicate depressive symptoms. Although differing sensitivities and specificities have been obtained across studies, for clinical purposes a score of > 5 points is suggestive of depression and should warrant a follow-up interview.

Scores > 10 almost always indicate the presence of depression.

Appendix 3.4

The Phone-FITT (1) (adapted format for telephone study)

1. Participation in physical activities (Phone FITT scale)	
V2q10_01	Did you engage in light housework, such as tidying, dusting, laundry or ironing? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing
V2q10_01a	How many times in a typical week did you do light housework? Enter number of times per week, zero if not done. Response – How many times in a week.
V2q10_01b	About how much time did you spend doing light housework on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing
V2q10_02	Did you engage in making meals, setting/clearing the table, washing dishes? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing
V2q10_02a	How many times in a typical week did you engage in making meals, setting/clearing the table and/or washing dishes? Enter number of times per week, zero if not done. Response – How many times in a week.
V2q10_02b	About how much time did you spend making meals, setting/clearing the table and/or washing dishes on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing
V2q10_03	Did you engage in shopping (for groceries, clothes or other)? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing
V2q10_03a	How many times in a typical week did you do shop? Enter number of times per week, zero if not done. Response – How many times in a week.
V2q10_03b	About how much time did you spend shopping on each occasion? (Enter number of minutes) 1 = 1-15 mins

	<p>2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_04	<p>Did you engage in heavy housework such as vacuuming, scrubbing floors, washing windows, carrying out rubbish bags? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_04a	<p>How many times in a typical week did you do heavy housework? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_04b	<p>About how much time did you spend doing heavy housework on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_05	<p>Did you engage in home maintenance such as painting, raking leaves, mowing the lawns? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_05a	<p>How many times in a typical week did you do home maintenance? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_05b	<p>About how much time did you spend doing home maintenance on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_06	<p>Did you engage in caring for another person such as pushing them in a wheelchair, or helping a person in/out of bed or chair? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_06a	<p>How many times in a typical week did you care for another person? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_06b	<p>About how much time did you spend caring for another person on each occasion? (Enter number of minutes) 1 = 1-15 mins</p>

	<p>2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_07	<p>Did you engage in lifting heavy weights to strengthen your legs? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_07a	<p>How many times in a typical week did you do lift heavy weights to strengthen your legs? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_07b	<p>About how much time did you spend lifting heavy weights to strengthen your legs on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_08	<p>Did you engage in other exercises designed to strengthen your legs (such as standing up/sitting down several times in chair or climbing stairs)? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_08a	<p>How many times in a typical week did you do engage in other exercises designed to strengthen your legs? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_08b	<p>About how much time did you spend doing other exercises designed to strengthen your legs on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_09	<p>Did you engage in lifting weights to strengthen your arms or other exercises to strengthen your arms (such as wall push ups)? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_09a	<p>How many times in a typical week did you do exercises to strengthen your arms? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_09b	<p>About how much time did you spend doing exercises to strengthen your arms on each occasion? (Enter number of minutes) 1 = 1-15 mins</p>

	<p>2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_10	<p>Did you engage in other home exercises not already mentioned such as stretching or balance exercises? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_10a	<p>How many times in a typical week did you do other home exercises? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_10b	<p>About how much time did you spend doing other home exercises on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_11	<p>Did you engage in walking for exercise? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_11a	<p>How many times in a typical week did you engage in walking for exercise? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_11b	<p>About how much time did you spend walking for exercise on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_12	<p>Did you engage in dancing? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_12a	<p>How many times in a typical week did you engage in dancing? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_12b	<p>About how much time did you spend dancing on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins</p>

	<p>4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_13	<p>Did you engage in swimming? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_13a	<p>How many times in a typical week did you engage in swimming? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_13b	<p>About how much time did you spend swimming on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_14	<p>Did you engage in swimming? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_14a	<p>How many times in a typical week did you engage in bicycling? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_14b	<p>About how much time did you spend biking on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>
V2q10_15	<p>Did you engage in golf? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing</p>
V2q10_15a	<p>How many times in a typical week did you engage in golf? Enter number of times per week, zero if not done. Response – How many times in a week.</p>
V2q10_15b	<p>About how much time did you spend doing golf on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing</p>

V2q10_16	Did you engage in gardening? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing
V2q10_16a	How many times in a typical week did you engage in gardening? Enter number of times per week, zero if not done. Response – How many times in a week.
V2q10_16b	About how much time did you spend gardening on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing
V2q10_17	Did you engage in any other regular physical activities that we haven't asked you about? 1 = Yes 2 = No 3 = Prefer not to answer 4 = Missing
V2q10_17a	Yes - Please describe this activity – Open response
V2q10_17b	How many times in a typical week did you do that activity? Enter number of times per week, zero if not done. Response – How many times in a week.
V2q10_17c	About how much time did you spend doing this on each occasion? (Enter number of minutes) 1 = 1-15 mins 2 = 16-30 mins 3 = 31-60 mins 4 = 1 hour or more 5 = Prefer not to answer 6 = Missing

Appendix 3.5

The Volition Scale (262)

Instructions for client	Personal causation	Values	Interest
<p>“Can you tell me how much you agree with these next statements for each of the activities you identified?”</p> <p>This is scored on a scale of 1 to 5. 1 being 'strongly agree' and 5 being 'strongly disagree'.</p>	<p>“I think I do this activity very well”:</p> <p>1 - Strongly agree 2 - Agree 3 - Undecided 4 - Disagree 5 - Strongly disagree</p>	<p>“For me, this activity is extremely important”:</p> <p>1 - Strongly agree 2 - Agree 3 - Undecided 4 - Disagree 5 - Strongly disagree</p>	<p>“I enjoy doing this activity very much”:</p> <p>1 - Strongly agree 2 - Agree 3 - Undecided 4 - Disagree 5 - Strongly disagree</p>

Appendix 3.6

Ethical approval letter – studies 2, 3, 4



Monash University Human Research Ethics Committee (MUHREC)
Research Office

Human Ethics Certificate of Approval

Date: 15 December 2011
Project Number: CF11/3625 - 2011001912
Project Title: Attitudes to falls and falls interventions in the community – Wave 2
Chief Investigator: Assoc Prof Terrence Haines
Approved: From: 15 December 2011 to 15 December 2016

Terms of approval

1. The Chief investigator is responsible for ensuring that permission letters are obtained, if relevant, and a copy forwarded to MUHREC before any data collection can occur at the specified organisation. **Failure to provide permission letters to MUHREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research.**
2. Approval is only valid whilst you hold a position at Monash University.
3. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval and to ensure the project is conducted as approved by MUHREC.
4. You should notify MUHREC immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
5. The Explanatory Statement must be on Monash University letterhead and the Monash University complaints clause must contain your project number.
6. **Amendments to the approved project (including changes in personnel):** Requires the submission of a Request for Amendment form to MUHREC and must not begin without written approval from MUHREC. Substantial variations may require a new application.
7. **Future correspondence:** Please quote the project number and project title above in any further correspondence.
8. **Annual reports:** Continued approval of this project is dependent on the submission of an Annual Report. This is determined by the date of your letter of approval.
9. **Final report:** A Final Report should be provided at the conclusion of the project. MUHREC should be notified if the project is discontinued before the expected date of completion.
10. **Monitoring:** Projects may be subject to an audit or any other form of monitoring by MUHREC at any time.
11. **Retention and storage of data:** The Chief Investigator is responsible for the storage and retention of original data pertaining to a project for a minimum period of five years.


Professor Ben Canny
Chair, MUHREC

cc: Dr Lesley Day; Prof Caroline Finch; Prof Keith Hill; Ms Elizabeth Rowland; Ms Lucy McPhate; Ms Emily Simek; Ms Lauren Robins

Postal – Monash University, Vic 3800, Australia
Building 3E, Room 111, Clayton Campus, Wellington Road, Clayton


www.monash.edu/research/ethics/human/index/html
ABN 12 377 614 012 CRICOS Provider #00008C

Appendix 3.7

Modified Falls Efficacy Scale (167)

Working together to prevent falls

The Modified Falls Efficacy Scale

Adapted from Tinetti et al, 1990; Hill et al, 1996

On a scale of 0 to 10, how confident are you that you can do each of these activities without falling, with 0 meaning "not confident/not sure at all", 5 being "fairly confident/fairly sure", and 10 being "completely confident/completely sure"?

NOTE:

- If you have stopped doing the activity at least partly because of being afraid of falling, score a 0;
- If you have stopped an activity purely because of a physical problem, leave that item blank (these items are not included in the calculation of the average MFES score).
- If you do not currently do the activity for other reasons, please rate that item based on how you perceive you would rate if you had to do the activity today.

		Not confident at all					Fairly confident					Completely confident											
		0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
1.	Get dressed and undressed	----- -----																					
2.	Prepare a simple meal	----- -----																					
3.	Take a bath or a shower	----- -----																					
4.	Get in/out of a chair	----- -----																					
5.	Get in/out of bed	----- -----																					
6.	Answer the door or telephone	----- -----																					
7.	Walk around the inside of your house	----- -----																					
8.	Reach into cabinets or closet	----- -----																					
9.	Light housekeeping	----- -----																					
10.	Simple shopping	----- -----																					
11.	Using public transport	----- -----																					
12.	Crossing roads	----- -----																					
13.	Light gardening or hanging out the washing*	----- -----																					
14.	Using front or rear steps at home	----- -----																					

* rate most commonly performed of these activities

Average score/item rated =/.....

=

1. Hill K, Schwarz J, et al. Fear of falling revisited. Archives Phys Med Rehabil 1996; 77:1025-1029.
2. Tinetti M, Richman D, Powell L. Falls efficacy as a measure of fear of falling. J Gerontology 1990; 45:P239-43.

In 2005 the Department of Human Services funded the National Ageing Research Institute to review and recommend a set of falls prevention resources for general use. The materials used as the basis for this generic resource were developed by the National Ageing Research Institute and the North West Hospital Falls Clinic, Parkville (adapted from Tinetti et al., 1990). This and other falls prevention resources are available from the department's Aged Care website at: <http://www.health.vic.gov.au/agedcare>.



Appendix 3.8

Semi structured interviews questions with prompts if required.

Facilitators and barriers to daily activities questionnaire:

From your information provided in the initial questionnaire, you identified that you are having difficulty with (Activity self-identified in beginning of interview). Your level of activity before and after your discharge home from hospital appears to be different, what do you think are some reasons for this?

What stops you from returning to these activities?

How does your physical health affect what you do?

How does your emotional and mental health affect what you do?

What helps you get back to your previous levels of activity?

People – Who are they? What do they do? What do they say? How often do you see them?

Different ways of doing something

Leaving activity out all together

Assistive equipment. For example: walking frame, rehab trolley, seat in the bathroom

Instruction from others

What motivates you to doing activities after being in hospital? Self, others (what people say, an incentive to complete things by a certain time for a visit...)

Health professionals (information like "you really need to because....., Or talking about the risks if you don't do something. Or having impact or authority to say – "DO THIS because..." and you do it.

What part does your daily living environment play in returning to previous levels of activity?

When I say environment I am talking about physical objects like furniture or walking aids, spaces, access (steps, paths), around home and in the community.

Also talking about relationships and the emotional environment that you live in.

Do you feel that you live in a positive or negative environment? Some relationships are helpful and encourage us to try things for ourselves; others can

put boundaries in around what we do (sometimes for safety) and thereby discourage us from doing things ourselves.

What part do other people play in your life in you being able to return to your previous levels of activity? Friends, family, health professionals (Doctor, pharmacist, therapists, nurse?)

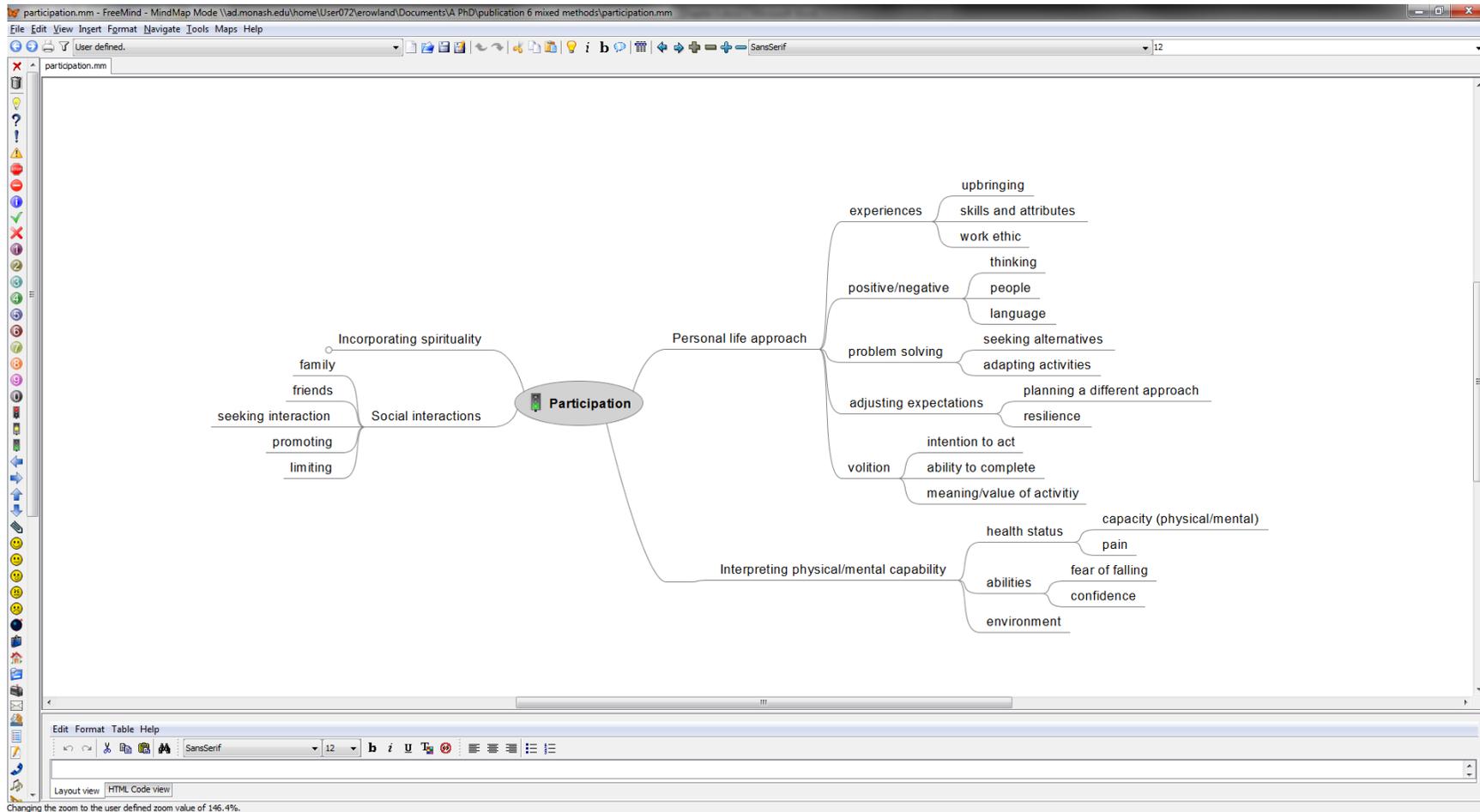
How do they support you?

How do they get in the way, or make things complicated?

If you didn't have this support in place, what do you think the issues would be?

Appendix 3.9

Thematic mind map example – qualitative analysis



Appendix 3.10 a

Coding comparison 1

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	No	Node	So	Source	Source Folder	Source Size	17 a Kappa	Agreement (%)	A and B (%)	Not A and Not B (%)	Disagreement (%)	A and Not B (%)	B and Not A (%)
2		assistance		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
3		attitude - negative		12117 a	Internals	40:07:0 duration	0.8024	93.93	15.91	78.01	6.07	2.15	3.92
4		attitude - positive		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
5		Barriers		12117 a	Internals	40:07:0 duration	0.8456	94.89	18.27	76.62	5.11	5.11	0
6		Beliefs or values		12117 a	Internals	40:07:0 duration	0	97.62	0	97.62	2.38	2.38	0
7		confidence		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
8		copng strategies		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
9		Death and dying		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
10		emotions		12117 a	Internals	40:07:0 duration	0.7806	93.75	13.98	79.77	6.25	0.56	5.69
11		environment		12117 a	Internals	40:07:0 duration	-0.018	96.46	0	96.46	3.54	1.83	1.72
12		expectations		12117 a	Internals	40:07:0 duration	-0.0412	91.58	0	91.58	8.42	3.19	5.23
13		Family - contributing to		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
14		Family - receiving from		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
15		fear		12117 a	Internals	40:07:0 duration	0	96.08	0	96.08	3.92	3.92	0
16		Friendships -relationships		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
17		Great quotes		12117 a	Internals	40:07:0 duration	0	93.46	0	93.46	6.54	6.54	0
18		Health professionals		12117 a	Internals	40:07:0 duration	0.7975	96.81	6.98	89.83	3.19	3.19	0
19		Heroism		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
20		Hospital experience		12117 a	Internals	40:07:0 duration	0	96.81	0	96.81	3.19	0	3.19
21		Important		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
22		innate work ethic		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
23		learning		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
24		limitations		12117 a	Internals	40:07:0 duration	0.9367	97.84	20.67	77.17	2.16	2.16	0
25		Limitations - inferred		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
26		Loneliness		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
27		Loss or grief		12117 a	Internals	40:07:0 duration	0.7371	97.85	3.19	94.66	2.15	0	2.15
28		Motivation		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
29		participation - current		12117 a	Internals	40:07:0 duration	-0.0507	89.02	0	89.02	10.98	7.4	3.58
30		Participation - future		12117 a	Internals	40:07:0 duration	1	100	1.72	98.28	0	0	0
31		Participation - past		12117 a	Internals	40:07:0 duration	0.5032	93.08	3.93	89.15	6.92	6.92	0
32		Passions		12117 a	Internals	40:07:0 duration	0	100	0	100	0	0	0
33		positive responses from others		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
34		positive actions		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
35		returning to occupations		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
36		Satisfaction		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
37		Social interactions		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
38		Spirituality		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
39		support		12117 a	Internals	40:07:0 duration	1	100	0	100	0	0	0
40													

Appendix 3.10 b

Coding comparison 2

	A	B	C	D	E	F	G	H	I	J	K	L	M
	Not Node	Source	Source Folder	Source Size	Kappa 16	Agreement (%)	A and B (%)	Not A and Not B (%)	Disagreement (%)	A and Not B (%)	B and Not A (%)		
1													
2	assistance	12116 a	Internals	1.27:57.2 duration	0.9533	98.44	20.41	78.03	1.56	0.98	0.58		
3	attitude - negative	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
4	attitude - positive	12116 a	Internals	1.27:57.2 duration		96.07	0	96.07	3.93	3.93	0		
5	Barriers	12116 a	Internals	1.27:57.2 duration		95.73	0	95.73	4.27	4.27	0		
6	Beliefs or values	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
7	confidence	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
8	coping strategies	12116 a	Internals	1.27:57.2 duration	0.952	99.52	5.01	94.51	0.48	0	0.48		
9	Death and dying	12116 a	Internals	1.27:57.2 duration		99.53	0	99.53	0.47	0.47	0		
10	emotions	12116 a	Internals	1.27:57.2 duration		99.52	0	99.52	0.48	0.48	0		
11	environment	12116 a	Internals	1.27:57.2 duration		99.12	0	99.12	0.88	0	0.88		
12	expectations	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
13	Family - contributing to	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
14	Family - receiving from	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
15	fear	12116 a	Internals	1.27:57.2 duration	0.8902	98.83	5.05	93.78	1.17	1.17	0		
16	Friendships -relationships	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
17	Great quotes	12116 a	Internals	1.27:57.2 duration		99.42	0	99.42	0.58	0.58	0		
18	Health professionals	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
19	Heroism	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
20	Hospital experience	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
21	Important	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
22	innate work ethic	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
23	learning	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
24	limitations	12116 a	Internals	1.27:57.2 duration	0.9671	99.63	5.83	93.8	0.37	0	0.37		
25	Limitations - inferred	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
26	Loneliness	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
27	Loss or grief	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
28	Motivation	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
29	participation - current	12116 a	Internals	1.27:57.2 duration		95.12	0	95.12	4.88	4.88	0		
30	Participation - future	12116 a	Internals	1.27:57.2 duration		99.68	0	99.68	0.32	0.32	0		
31	Participation - past	12116 a	Internals	1.27:57.2 duration	0.8707	98.16	6.77	91.4	1.84	0	1.84		
32	Passions	12116 a	Internals	1.27:57.2 duration		96.89	0	96.89	3.11	3.11	0		
33	positive responses from others	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
34	positive actions	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
35	returning to occupations	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
36	Satisfaction	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
37	Social interactions	12116 a	Internals	1.27:57.2 duration		97.93	0	97.93	2.07	2.07	0		
38	Spirituality	12116 a	Internals	1.27:57.2 duration		100	0	100	0	0	0		
39	support	12116 a	Internals	1.27:57.2 duration	0.9167	98.65	8.21	90.44	1.35	0	1.35		

Appendix 3.11

Ethical approval letter – study 5



Research Directorate
Southern Health
Monash Medical Centre
246 Clayton Road
Clayton Victoria 3168
Australia

Postal address:
Locked Bsg 29
Clayton South Vic 3169
Australia



10 January 2012

A/Prof Terry Haines
Director Allied Health Clinical Research Unit
Primary Care and Physiotherapy Department
Allied Health Clinical Research Unit
Kingston Centre
Cheltenham Vic 3192

Dear A/Prof Haines

Study title: Understanding occupational participation (in activities of daily living, productivity and leisure) in adults 65 years and over, following hospitalisation
Southern Health HREC Ref: 11383B

The Southern Health HREC B reviewed the above application at the meeting held on 08 December 2011. In addition, the HREC is satisfied that the responses to our correspondence of 14 December 2011 have been sufficiently addressed.

The HREC approved the above application on the basis of the information provided in the application form, protocol and supporting documentation.

This reviewing HREC is accredited by the Consultative Council for Human Research Ethics under the single ethical review system.

Approval

The HREC and Site Specific Authorisation approval is from the date of this letter.

Approval is given in accordance with the research conforming to the *National Health and Medical Research Council Act 1992* and the *National Statement on Ethical Conduct in Human Research (2007)*. The HREC has ethically approved this research according to the Memorandum of Understanding between the Consultative Council and the participating organisations conducting the research.

Approval is given for this research project to be conducted at the following sites and campuses:

- Southern Health, Monash Medical Centre
 - Clayton Campus
 - Kingston Campus

You must comply with the following conditions:

The Chief Principal Investigator is required to notify the Administrative Officer, Research Directorate, Southern Health of:

Southern Health
ABN 62 142 080 338

Dandenong Hospital
Kingston Centre
Cranbourne Integrated
Care Centre

Monash Medical Centre - Clayton
Monash Medical Centre - Moorabbin
Casey Hospital
www.southernhealth.org.au

Community Health
Services across the
South East

1. Any change in protocol and the reason for that change together with an indication of ethical implications (if any)
2. Serious or unexpected adverse effects of project on subjects and steps taken to deal with them
3. Any unforeseen events that might affect continued ethical acceptability of the project
4. Any expiry of the insurance coverage provided in respect of sponsored trials
5. Discontinuation of the project before the expected date of completion, giving reasons
6. Any change in personnel involved in the research project including any study member resigning from Southern Health &/or the study team.

At the conclusion of the project or every twelve months if the project continues, the Principal Investigator is required to complete and forward an annual report to the Committee.

Annual report forms will be forwarded to the researcher.

Approved documents

Documents reviewed and approved at the meeting were:

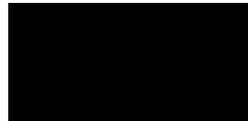
<i>Document</i>	<i>Version</i>	<i>Date</i>
Participant Information and Consent Form	2	19 December 2011

If you should have any queries about your project please contact Deborah Dell or Julie



The HREC wishes you and your colleagues every success in your research.

Yours sincerely



Dr James Doery
Medical Administrator

Cc: MUHREC
Cc: Ms Elizabeth Rowland
Cc: Dr Ted Brown

Appendix 3.12

Consent form [NB Southern Health changed to Monash Health 2013, Elizabeth Rowland reverted to her maiden name of Pritchard after this was approved.]



Participant information and consent form for Southern Health

Project Title: Understanding occupational participation in daily activities with adults 65 years and over, following hospitalisation.

Principal researcher: Associate Professor Terry Haines

Associate researcher: Associate Professor Ted Brown

Student researcher: Elizabeth Rowland

1. Introduction



You are invited to take part in this research project because you are currently in hospital, planning to return home to live and 65 years or over. Your name has been passed on to me from the clinical staff that I understand talked with you, and you agreed to have a conversation with me (the researcher). This research project aims to explore how participation in your normal activities is affected following a time in hospital and what are some of the reasons for this.

This Participant Information and Consent Form, tells you about the research project. It explains what is involved to help you decide if you want to take part.

Please read this information carefully. Ask questions about anything that you don't understand or want to know more about. Before deciding whether or not to take part, you might want to talk about it with a relative, friend or health worker.

Participation in this research is voluntary. If you don't wish to take part, you don't have to.

If you decide you do want to take part in the research project, you will be asked to sign the consent section. By signing it you are telling us that you:

- understand what you have read;
- consent to take part in the research project;
- consent to be involved in the procedures described;
- consent to the use of your personal and health information as described.

You will be given a copy of this Participant Information and Consent Form to keep.

2. What is the purpose of this research project?

Common sense tells us that people's level of activity following a time in hospital is reduced and some people do not get back to their usual activities at all however, we have no evidence to tell us the **extent** of this or **why** this occurs. The aim of this project is to find out some of these reasons so that we can address the issue further and find ways of getting people back to their normal activities quicker. This is particularly important for those who have fallen and in hospital. If we find what stops people from returning to their daily activities and what helps them to return to these, then we can use this information to reshape interventions as health professionals. This will help us to design future strategies to help older people to be more engaged and independent in their usual activities.

We are aiming to interview 24 people, 12 from Monash Medical Centre and 12 from the Kingston Centre. All these participants have been in hospital and looking at returning to live at home.

The people involved in looking at this information that is generated, are from Southern Health Allied Health Research Centre and Monash University and has been funded by internal unit funds of the Allied Health Research Centre, Southern Health. The results of this project will be used by the student researcher to obtain a Doctorate of Philosophy (PhD).

3. What does participation in this research project involve?

Participation in this project, will involve being interviewed at home within four weeks of being discharged. The interview will take place at a time that is convenient for you and take around 45 minutes to one hour. There will be some questionnaires, the student researcher will be present to assist you with completion of these, and then you will be asked to answer some broader questions like: 1) What stops you from returning to these activities? 2) What helps you get back to your previous levels of activity?

We will tape record your responses so that we can write them up in full and analyse them later. Your name and any identifying factors will be removed from these transcripts so that the data is stored without identifying information. This information will therefore not be accessible for any publications resulting from this research.

4. What are the possible benefits?

There will be no direct benefit to you for taking part in this research but it will provide an opportunity for your answers to influence health interventions in the future.

5. What are the possible risks?

We do not anticipate any risks, side effects or discomforts resulting from your participation in this study, however, if you become upset or distressed as a result of your participation in the research, the researcher will be able to arrange a referral to be made for counselling or other appropriate support at your local hospital. Any counselling or support will be provided by staff who are not members of the research team. In addition, you may prefer to suspend or end your participation in the research if distress occurs.

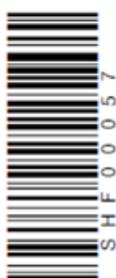
6. Do I have to take part in this research project?

Participation in any research project is voluntary. If you do not wish to take part, you do not have to. If you decide to take part and later change your mind, you are free to withdraw at any stage without any consequence. However, once your information has been entered anonymously, it cannot be withdrawn.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your relationship with Southern Health or the care provided by any Southern Health employee.

7. How will I be informed of the final results of this research project?

A summary of the project findings will be emailed or posted to you at the completion of the project. If you wish to receive a copy by email, you will need to



provide your email address.

8. What will happen to information about me?

The information we collect will be stored in an anonymous manner in a password-protected file for a period of 7 years after the end of the project, on the computer of the principal investigator. This is kept in a key-lockable office. Only members of the investigative team will be able to access this information. After this time, the data will be destroyed.

Any information obtained in connection with this research project that can identify you will remain confidential and will only be used for the purpose of this research project. In any publication and/or presentation, information will be provided in such a way that you cannot be identified, except with your permission. Information about your participation in this research project may be recorded in your health records.



9. Can I access research information kept about me?

In accordance with relevant Australian and/or Victorian privacy and other relevant laws, you have the right to access the information collected and stored by the researchers about you. You also have the right to request that any information, with which you disagree, be corrected. Please contact one of the researchers named at the end of this document if you would like to access your information.

10. Is this research project approved?

The ethical aspects of this research project have been approved by the Human Research Ethics Committee of Southern Health.

This project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.

11. Consent

I have read, or have had this document read to me in a language that I understand, and I understand the purposes, procedures and risks of this research project as described within it.

I have had an opportunity to ask questions and I am satisfied with the answers I have received.

I freely agree to participate in this research project, as described.

I understand that I will be given a signed copy of this document to keep.

Participant's name (printed)

Signature Date

Declaration by researcher: I have given a verbal explanation of the research project, its procedures and risks and I believe that the participant has understood that explanation.*

Researcher's name (printed)

Signature Date

Note: All parties signing the consent section must date their own signature.

12. Who can I contact?

Who you may need to contact will depend on the nature of your query, therefore, please note the following:

If you want any further information concerning this project or if you have concerns about any aspect of your involvement in the project, you can contact the principal researcher Dr Terry Haines [redacted] or the student researcher [redacted]

For complaints:

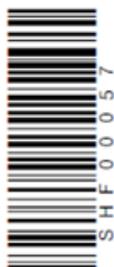
If you have any complaints about any aspect of the project, the way it is being conducted or any questions about being a research participant in general, then you may contact:

Name: Ms Malar Thiagarajan

Position: Director of Research Services, Southern Health Research Directorate
[redacted]

Thank you for reading this.

--ooo--



RESEARCH PAPER

Factors impacting the household and recreation participation of older adults living in the community

Elizabeth Pritchard¹, Anna Barker², Lesley Day³, Lindy Clemson⁴, Ted Brown¹, and Terry Haines¹

¹Department of Physiotherapy and Occupational Therapy, Monash University, Peninsula Campus, Melbourne, Australia, ²Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia, ³Monash Injury Research Institute, Monash University, Melbourne, Australia, and ⁴Department of Occupational Therapy and Ageing, The University of Sydney, Sydney, Australia

Abstract

Purpose: To identify demographic, physical and psychosocial determinants associated with participation in daily activities of community-dwelling older adults. **Methods:** A cross-sectional design of older adults (≥ 70 years) from Victoria, Australia, residing in their homes was drawn from a convenience sample. The outcomes were recent participation in household and recreational activities as measured by the Phone-FITT. Explanatory variables included demographics, physical and mental health functioning (Short Form-12 version 2, Geriatric Depression Scale 15). Associations were analyzed through linear regression. **Results:** There were 244 participants (60% female), with a mean age of 77.5 years (SD 5.7). Higher levels of depression and fewer falls (during the previous year) were independently associated with restrictions in household participation ($p < 0.001$, $p < 0.001$). For recreational participation, higher levels of depression were associated with restricted participation ($p < 0.001$). **Conclusion:** Screening for depression should be a key component of health assessments with older adults. Untreated depression may lead to lower participation rates in daily activities potentially resulting in social isolation. Fewer falls and restricted household participation were associated, but no association was observed between falls and recreational participation. Further studies are required to explore this association in more detail.

Keywords

Activities of daily living, depression, older adults, social participation

History

Received 16 June 2013
Revised 20 January 2014
Accepted 5 March 2014
Published online 26 March 2014

► Implications for Rehabilitation

- Depression is significantly correlated with the level of participation in daily activities for older adults.
- Health professionals need to screen for depression when working with older adults.

Introduction

Participation in daily activities and social roles has become an important aspect to consider in health settings [1–3]. Participation is defined as “engagement in a life situation” [4] and has been linked to higher levels of life satisfaction [5], and improved health and wellbeing [1,6,7]. Sub-optimal levels of participation in daily activities can lead to long-term negative health sequelae [5] including social isolation [3], depression or anxiety [8], physical or cognitive decline [1], and may ultimately lead to an increased health service burden [1].

The determinants of participation are not yet fully understood. There is evidence indicating that participation in physical activities is linked to the physical and cognitive capacity to perform those activities. One longitudinal study [9] identified that

ageing was associated with a decline in functional and cognitive abilities which in turn negatively impacted on participation [9]. Additionally, emotional problems have been suggested as limiting one’s participation in daily activities [8]. However, a descriptive cross-sectional investigation of 200 older adults living in the community was able to identify determinants of physical capacity (e.g. leg strength, timed walking test, balance) and noted that it was difficult to predict physical activity participation due to the complexity of participation [10].

A factor complicating this picture is that participation has previously been explored as separate components (e.g. social, physical, mental participation) in different studies. For example, studies have examined social participation [11], participation in activities of daily living (bathing, dressing, walking and transferring) [1], physical activity/exercise [12] and leisure [13]. It is possible that factors associated with some forms of participation (e.g. leisure) will not be consistent with factors associated with other forms of participation (e.g. self-care). Further research is required to determine if this is the case.

To address these deficiencies in the evidence base, this study aims to investigate potential factors that impact the participation

Address for correspondence: Elizabeth Pritchard, Department of Physiotherapy and Occupational Therapy, Monash University, Peninsula Campus, McMahon Road, Melbourne 3199, Australia. [REDACTED]

Appendix 5.1

Submission of Rasch paper for publication

 Archives PMR [REDACTED] 13:22 (4 minutes ago) ☆ ↶ ▼

to me ▾

Dear Ms. Elizabeth Pritchard,

We have received your article "Examining the internal construct validity of the Volition Scale using the Rasch measurement model." for consideration for publication in Archives of Physical Medicine and Rehabilitation.

Your manuscript will be given a reference number once an editor has been assigned.

To track the status of your paper, please do the following:

1. Go to this URL: <http://ees.elsevier.com/archives-pmr/>
2. Enter these login details:
Your username is: elizabeth.pritchard@monash.edu
If you need to retrieve password details, please go to: http://ees.elsevier.com/archives-pmr/automail_query.asp
3. Click [Author Login]
This takes you to the Author Main Menu.
4. Click [Submissions Being Processed]

To ensure the confidentiality of the peer review process, the Editorial Board asks that only the designated corresponding author communicate with us.

The Editorial Board reminds authors that it is their responsibility to ensure that their research has received the appropriate institutional review board or ethics approval and that study subjects have provided informed consent to participate. If such approval and/or consent was not obtained, then it is your responsibility to inform the Managing Editor why it was not.

Thank you for giving the Archives of PM&R an opportunity to review your work.

Kind regards,

Elsevier Editorial System
Archives of Physical Medicine and Rehabilitation

Please note that the editorial process varies considerably from journal to journal. To view a sample editorial process, please click here:
http://ees.elsevier.com/eeshelp/sample_editorial_process.pdf

For further assistance, please visit our customer support site at <http://help.elsevier.com/app/answers/list/p/7923>. Here you can search for solutions on a range of topics, find answers to frequently asked

Clinical Rehabilitation

<http://cre.sagepub.com/>

Exploring the association between volition and participation in daily life activities with older adults living in the community

Elizabeth K Pritchard, G Ted Brown, Anna L Barker and Terry P Haines
Clin Rehabil published online 20 May 2014
DOI: 10.1177/0269215514529803

The online version of this article can be found at:
<http://cre.sagepub.com/content/early/2014/05/19/0269215514529803>

Published by:



<http://www.sagepublications.com>

Additional services and information for *Clinical Rehabilitation* can be found at:

Email Alerts: <http://cre.sagepub.com/cgi/alerts>

Subscriptions: <http://cre.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

>> **OnlineFirst Version of Record - May 20, 2014**

[What is This?](#)



Personal Life Approach: An Interactive Way of Understanding Older Adults' Participation in Activities Following Hospitalization

Elizabeth Pritchard, MHSOT,^{1,*} Narelle Warren, PhD,² Anna Barker, PhD,³ Ted Brown, PhD,⁴ and Terry Haines, PhD^{1,5}

¹Department of Physiotherapy, Monash University, Peninsula Campus, McMahons Road, Frankston, Melbourne, Victoria, Australia. ²Social science and health research, School of Psychology and Psychiatry, Monash University, Clayton Campus, Wellington Road, Melbourne, Victoria, Australia. ³Department of Epidemiology and Preventive Medicine, The Alfred Research Center, Monash University, 99 Commercial Road, Melbourne, Victoria, Australia. ⁴Occupational Therapy Department, Monash University, Peninsula Campus, McMahons Road, Frankston, Melbourne, Victoria, Australia. ⁵Allied Health Research Unit, Monash Health, Melbourne, Victoria, Australia.

*Address correspondence to Elizabeth Pritchard, MHSOT, Department of Physiotherapy, Monash University, Peninsula Campus, McMahons Road, Frankston, Melbourne, Victoria 3199, Australia. E-mail: elizabeth.pritchard@monash.edu

Received April 17 2014; Accepted October 20 2014.

Decision Editor: Barbara Bowers, PhD

Purpose: To explore factors that support or inhibit participation in daily activities amongst older adults who have returned home following hospitalization.

Design and Methods: An exploratory qualitative design was used to gather information from a sample of older adults. Participants were recruited during their hospital stay from acute and rehabilitation wards in Victoria, Australia. Semistructured interviews were carried out in the participants' home within 6 weeks of discharge. Data were analyzed through thematic analysis.

Results: Participants ($n = 21$) were aged ≥ 65 years (mean 82 years [SD 8.5]), 57% were female ($n = 11$) and 76% with English as their first language ($n = 16$). Thematic analysis identified one primary theme (*personal life approach*) moderated by spirituality and two subthemes; *interpretation of physical and mental abilities*, and *social interactions*. The life approach acted as a filter through which participants interpreted their abilities and social interactions that either supported or inhibited their return to participation after a stay in hospital.

Implications: The findings suggest that clinicians need to consider the individual's approach to life in their recovery following hospitalization. This approach can influence their return to participation in activities and potentially be supported (towards higher levels of optimism) by health professionals to enhance participation in activities postdischarge.

Key words: Participation in activities, Hospitalization, Internal/external control, Optimism, Qualitative analysis: thematic analysis

Participation in life activities is an innate human need and a goal that health professionals work towards with clients (Townsend & Polatajko, 2007; Wilcock, 2005). Various definitions of participation are presented in literature,