Negotiating the return to work journey after an earthquake injury

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Abstract

Background: Earthquakes are inevitable natural occurrences. When they occur in populated areas the effects can be devastating, often causing multiple casualties. Little is known about the long-term health and wellbeing outcomes of individuals with trauma as the result of an earthquake. However, there is growing evidence that up to 80% of individuals with traumatic injuries have long term disruption of social roles and participation. Successful return to work following injury improves quality of life, restores important pre-injury roles and is a means of social interaction, although the return to work rate in the trauma population group is comparatively low. Little is known about the return to work outcomes after earthquake injury.

Aims: The aims of this study were to explore the influences on return to work for the injured survivors of the Christchurch, New Zealand February 22nd 2011 earthquake.

Methodology: A constructivist grounded theory methodology was used to explore the influences on return to work for the injured survivors of the Christchurch, New Zealand February 22nd 2011 earthquake.

Methods: Fourteen injured survivors of the Christchurch earthquake were interviewed twice between July 2012 and January 2014. In addition, single interviews were carried out with twelve professionals involved in the return to work process for the injured earthquake survivors (six vocational professionals and six Accident Compensation Corporation staff). Data analysis focused on the differences in the return to work processes and outcomes as a result of the earthquake.

Results: Four themes were identified: rebuilding normality, negotiating the return to work journey, working within the system and the earthquake experience. Three separate stages of return to work were identified with specific barriers and facilitators at each stage: (1) planning and preparing work; (2) achieving work; and (3) maintaining work. Across these stages, the earthquake appeared to have greatest impact on the first phase: planning and acquiring work. This seemed to connect to contextual factors, such as, environmental (earthquake damage to the area, services systems and policies) and relational (empathy and connection between the injured person and their employer and co-workers with a shared experience of the earthquake within the workplace).
**Conclusion:** Return to work following earthquake injury followed a similar process to other trauma populations in many ways. However, it was complicated by factors that other injured workers (and employers) do not have to negotiate. However, the influence of a shared experience with the employer and co-worker appeared to impact positively on the experiences and outcomes of return to work. The results of this thesis provide new information about the barriers and facilitators to work after an earthquake injury and has potential impact for other major disasters.
Publications arising from this thesis


Conference presentations arising from this thesis


Acknowledgements

The earthquake was a significant event for everyone in Christchurch. As we approach the fourth anniversary of the earthquake, the tragic loss of life has not been forgotten and the scars of the earthquake are still visible on the city and the people who live here. The earthquake generated my interest in this PhD topic, but also reinforced to me that life is short and unpredictable – it provided the impetus to overcome my fear, resign my job and enter the arena of full time study.

I have not completed this PhD in isolation and I have many people to thank for their help and support on my journey. First, I would like to sincerely thank my fantastic team of supervisors: Dr Tim Woodfield, Professor Gary Hooper, Dr Jennifer Dunn and Professor Kath McPherson. Each has contributed an amazing depth of knowledge to the project. They have encouraged and challenged me in different ways, helped me develop as a researcher and persevered with me to get me across the finish line.

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<th>Description</th>
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<tbody>
<tr>
<td>ACC</td>
<td>Accident Compensation Corporation</td>
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<tr>
<td>AIS</td>
<td>The American Spinal Injury Association Impairment Scale</td>
</tr>
<tr>
<td>AKA</td>
<td>Above Knee Amputation</td>
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<tr>
<td>CBD</td>
<td>Central Business District</td>
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<tr>
<td>CDHB</td>
<td>Canterbury District Health Board</td>
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<tr>
<td>CHART</td>
<td>The Craig Handicap Assessment and Reporting Technique</td>
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<tr>
<td>EQC</td>
<td>Earthquake Commission</td>
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<tr>
<td>GCS</td>
<td>Glasgow Coma Score</td>
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<tr>
<td>GDP</td>
<td>Gross domestic product</td>
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<tr>
<td>HRQoL</td>
<td>Health Related Quality of Life</td>
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<tr>
<td>ICF</td>
<td>International Classification of Functioning and Disability</td>
</tr>
<tr>
<td>ICIDH</td>
<td>International Classification of Impairments, Disability and Handicap</td>
</tr>
<tr>
<td>ISS</td>
<td>Injury Severity Score</td>
</tr>
<tr>
<td>NISS</td>
<td>New Injury Severity Score</td>
</tr>
<tr>
<td>NZ</td>
<td>New Zealand</td>
</tr>
<tr>
<td>OT</td>
<td>Occupational Therapist</td>
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<tr>
<td>RTW</td>
<td>Return to work</td>
</tr>
<tr>
<td>RHISE</td>
<td>Reseurching the Health Implications of Seismic Events</td>
</tr>
<tr>
<td>SCI</td>
<td>Spinal cord injury</td>
</tr>
<tr>
<td>TBI</td>
<td>Traumatic brain injury</td>
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<tr>
<td>QoL</td>
<td>Quality of Life</td>
</tr>
<tr>
<td>PTSD</td>
<td>Posttraumatic Stress Disorder</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
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<tr>
<td>WHO</td>
<td>World Health Organisation</td>
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Glossary

**Abductive reasoning:** “A type of reasoning that begins by examining data and after scrutiny of these data, entertains all possible explanations for the observed data, and then forms hypotheses to confirm or disconfirm until the researcher arrives at the most plausible interpretation of the observed data.” (Charmaz, 2006, p. 186).

**ACC:** The Accident Compensation Corporation (ACC) administers New Zealand’s accident compensation scheme. This scheme provides personal injury cover for all New Zealand citizens, residents and temporary visitors to New Zealand. In return people, do not have the right to sue for personal injury, other than for exemplary damages (Accident Compensation Corporation, 2014). ACC was introduced in 1972, and provides no-fault 24-hour insurance funded through employment and driver levies, with a contribution from general taxation. It is based on five principles: community responsibility, comprehensive entitlement, complete rehabilitation, real compensation and administrative efficiency (McNaughton & McPherson, 2000).

**Accommodation:** An adjustment to a job, the work environment or the way things are usually done, with the aim of reducing or eliminating workplace barriers to enable a qualified individual with a disability to return to work. Accommodation can include modified or alternate duties, graded work exposure, work trials, workstation redesign, activity restrictions, reduced hours or other efforts to temporarily reduce physical work demands (Foreman, Murphy, & Swerissen, 2006, p. 23).

**Activity limitation:** “Difficulties an individual may have in executing activities” (World Health Organisation, 2001, p. 14).

**Activity:** “The execution of a task or action by an individual” (World Health Organisation, 2001, p. 14).

**AISA Impairment Scale (AIS):** A universally accepted impairment scale to grade the degree of impairment following spinal cord injury.

**Body function:** The “physiological functions of body systems (including psychological functions)” (World Health Organisation, 2001, p. 12).

**Body structure:** The “anatomical parts of the body such as organs, limbs and their components” (World Health Organisation, 2001, p. 12).
Categorising: Analytical step of selecting certain codes of having overriding significance.

Christchurch Earthquake: 6.3 magnitude earthquake 10 km south-east of the Christchurch city centre at a depth of 5 km at 12.51 pm local time on the 22nd of February 2011.


Constructivism: A theoretical perspective that “truth, or meaning, comes into existence in and out of our engagement with the realities in our world” (Crotty, 1998, p. 8); it assumes the researcher and their research participants co-construct the realities in which they participate.

Constructivist: Epistemology which posits that no one single ‘truth’ exists, but rather there are individual reconstructions of ‘truth’ that merge around a consensus (Gardner, 2010) meaning is not discovered but constructed (Crotty, 1998).

Credibility: A criteria for evaluating constructivist grounded theory which considers how believable the research process, data collection and analysis are (Charmaz, 2014).

Critical realism: The critical realist perspective believes that reality exists but we can never be completely positive it has been uncovered (Guba, 1990).

Darfield Earthquake: 7.1 Magnitude earthquake centred on the previously unrecognised Greendale fault in Darfield 40 km west of Christchurch at 4:35 am on the 4th September 2011.

Data saturation: The point when no new information is obtained from participants, each category is conceptually complete and variations in the categories are explained and complete (Bluff, 2005). Critics question the ability of researchers to achieve data saturation and argue that, in practice, other limitations occur before this theoretical ideology is achieved.
**Disability:** The “umbrella term for impairments, activity limitations or participation restrictions” (World Health Organisation, 2001, p. 3).

**Employment:** Remunerative work which, typically, involves a contractual relationship between the employer and the worker (Waddell & Burton, 2006).

**Epistemology:** Our intrinsic beliefs of the creation of knowledge, in other words, how we know what we know (Crotty, 1998).

**Impairment:** The “problems in body function or structure as a significant deviation or loss” (World Health Organisation, 2001, p. 12).

**Injury Severity Score (ISS):** Developed by Barker, O'Neill, Haddon, and Long (1974). The Injury Severity Score is an ordinal scale describing injury severity from multiple injuries, ranging from 1 to 75, and is calculated from the sum of the squares of the Abbreviated Injury Score (ABI) for the three most severely injured body regions from the six categories of body systems: head or neck, face, chest, abdominal or pelvic contents, extremities or pelvic girdle, and external.

**Māori:** Indigenous New Zealander; an indigenous person from Aotearoa/New Zealand.

**Objectivism:** Epistemology which holds that there is a single truth which can be discovered

**Ontology:** The nature and structure of reality, what can be known (Crotty, 1998).

**Originality:** Criteria for evaluating constructivist grounded theory which considers the originality of the research, the significance of the research socially and theoretically, and whether the research challenges current ideas, and concepts (Charmaz, 2014).

**Participation restriction:** The “problems an individual may experience in involve in life situations” (World Health Organisation, 2001, p. 14).


**Personal factors:** Include factors specific to the individuals, such as gender, age, education coping styles, social background, profession, past and current experience, that influence how disability is experienced by the individual.
**Positivism:** Positivism believes in a single reality that can be discovered: it is associated with quantitative research and, typically, begins with a question or hypothesis to be tested through a process of scientific data collection using a deductive process to draw a conclusion.

**Productivity:** Gainful employment, home making, school or education programmes, community organisations and leisure time activities (DeJong & Hughes, 1982).

**Purposeful sampling:** A sampling method whereby participants are chosen for specific characteristics rather than to be representative or random.

**Realism:** Ontological perspective that holds a belief that reality exists out there (Guba, 1990).

**Rehabilitation:** Refers to a ‘process aimed at enabling persons with disabilities to reach and maintain their optimal physical, sensory, intellectual, psychiatric and/or social functional levels, thus providing them with the tools to change their lives towards a higher level of independence. Rehabilitation may include measures to provide and/or restore functions, or compensate for the loss, or absence, of a function or for a functional limitation. The rehabilitation process does not involve initial medical care. It includes a wide range of measures and activities from more basic and general rehabilitation to goal-oriented activities, for instance vocational rehabilitation (World Health Organisation, 2001, p. 290).

**Relativism:** An ontological perspective that holds the belief that multiple realities exist in the form of multiple mental constructions, socially and experientially based, local and specific, that are dependent for their form and content on the person who holds them (Guba, 1990).

**Research method:** The actual techniques or procedures used to gather and analyse data.

**Research methodology:** The process and design underpinning the choice of methods.

**Resonance:** Criteria for evaluating constructivist grounded theory which considers how true the research is. Whether it makes sense to the participants in the research or others with similar circumstances, and whether further understanding of their worlds has been gained through the research (Charmaz, 2014).
**RTW stakeholder:** A RTW stakeholder is a person, organisation or agency that has a vested interest in the RTW process. “The five main groups are workers, employers, health-care providers, payers and government/society” (Young, Wasiak, et al., 2005, p. 544).

**RTW:** RTW is used to describe the concept, process, system and experience of return to work. Where possible this has been qualified.

**Search strategy:** The exact terms and their combinations used to search a bibliographic database (Centre for Reviews and Dissemination, 2009).

**Subjectivism:** Epistemological position that reality is the product of subjective experience (Crotty, 1998).

**Substance theory:** A theoretical explanation of a particular phenomenon in a particular area that makes claims to generalise beyond the phenomenon studied.

**Theoretical perspective:** The philosophical stance that informs our methodology (Crotty, 1998).

**Theoretical sampling:** A sampling method in grounded theory whereby the selection of participants is strategic, to explore or expand the theory derived from the existing data.

**Usefulness:** Criteria for evaluating constructivist grounded theory which considers how the work contributes to knowledge, and whether that can be linked to other substantive theories or influence further research (Charmaz, 2014).

**Vocational professional:** An ACC-accredited professional working with clients to achieve RTW.

**Vocational rehabilitation:** Vocational rehabilitation is a multi-professional evidence-based approach that is provided in different settings, services, and activities to working age individuals with health-related impairments, limitations, or restrictions with work functioning, and whose primary aim is to optimise work participation (Escorpizo et al., 2011, p. 130).

**Work:** Involves the “application of physical or mental effort, skills, knowledge or other personal resources, usually involves commitment over time, and has connotations of
effort and a need to labour or exert oneself … Work is not only ‘a job’ or paid employment, but includes unpaid or voluntary work, education and training, family responsibilities and caring” (Waddell & Burton, 2006, p. 4).

**Workplace accommodation:** An adaptation to work tasks or the work environment to eliminate or reduce barriers to enable a person to RTW after injury (Foreman et al., 2006).
1 Introduction

Earthquakes are experienced worldwide at an average of two each minute, totalling more than a million earthquakes a year (Naghii, 2005; Noji, 1991; Perez & Thompson, 1994). Over the past 25 years more than 530,000 deaths have been reported from earthquakes (Ramirez & Peek-Asa, 2005; WHO Collaborating Centre for Research on the Epidemiology of Disasters, 2011). Although loss of life is a tragic consequence of earthquakes, a great many more people are left with significant disabling injuries after earthquakes; in 2011 alone, approximately 14,629 people were injured in earthquakes (Vervaeck & Daniel, 2012). In New Zealand (NZ), the Christchurch 22nd February 2011 earthquake claimed one hundred and eighty-five lives and resulted in over 6,000 injury claims submitted to the New Zealand Accident Compensation Corporation (ACC) (Ardagh et al., 2012).

Maximising participation outcomes after traumatic injury is a fundamental aspect of rehabilitation in the developed world. Employment is often a focus of participation goals because it has many benefits, such as improved quality of life (QoL), restoration of important pre-injury roles, a means of social interaction and maintenance of friendships, as well as financial implications (Waddell & Burton, 2006). However, despite these recognised health, social and financial benefits of work, many people who have sustained traumatic injuries do not return to employment (Clay, Newstead, & McClure, 2010; Grotz, Hohensee, Remmers, Wagner, & Regel, 1997; Halcomb, Daly, Davidson, Elliott, & Griffiths, 2005; Weninger, Aldrian, Koenig, Ve´csei, & Nau, 2008).

In a post-earthquake situation injured individuals face return to work (RTW) in a unique environment. In Christchurch, the majority of unreinforced masonry buildings suffered significant damage or collapse. Whole communities were affected by land damage and liquefaction (a mix of water and sediment that emerged through fissures in the ground). Consequently, 1,300 properties were demolished by the end of 2012 because they had been deemed unsuitable for building; the land has been cleared and grassed over (Statistics New Zealand). Many Christchurch residents were temporarily or permanently displaced, and 8900 people left the city in the first six months of 2011 (Parker & Steenkamp, 2012), significantly altering community and social networks. Initially, four square kilometres of the Christchurch CBD were cordoned off; this area
contained 6000 businesses and over 51,000 workers. This shut down all economic activity within the cordon (Stevenson, J.R., Seville, & Vargo, 2012). Although this reduced in size over time, the final cordon was not lifted until more than two years later on 30 June 2013. Displaced businesses relocated to other areas of the city (Bowden, 2011) but also moved to other geographic locations across NZ. Central government provided temporary financial support for businesses to assist employers with wage payments to their staff and also for employees working for businesses that were no longer considered viable. Businesses relocating in Christchurch often faced working in cramped and unsuitable quarters in any available undamaged building. All these factors affected the work opportunities of survivors, including those injured.

1.1 Personal background to the study

My interest in this topic originated from personal and clinical experience of living and working as a physiotherapist in Christchurch during the earthquakes of 2010-2012. I experienced first-hand the impact of the February earthquake; I treated patients with serious injuries as a result of the earthquake, while living in a city affected by a major earthquake. From my perspective, the rehabilitation of the people injured in the earthquake appeared different from the rehabilitation of people with usual traumatic injuries. The injured earthquake survivors presented with uncommon injuries such as bilateral above knee amputations, crush injuries and other atypical presentations, such as women with thoracic spinal cord injury (SCI). They took uncharacteristic routes through the rehabilitation system, moving outside the injury-specific pathways normally in place within the hospital. Many of the staff working with the injured earthquake survivors were experiencing their own issues (Tovaranonte & Cawood, 2013). They were dealing with the additional stresses of living in a post-earthquake environment, having damage to their homes, a lack of electricity, fresh water and sewerage, and frustrating changes to the basic infrastructure; for example, the interruption of transport systems.

Having previously researched the experience of leaving a spinal unit and returning to the wider community in NZ for my Master’s thesis (Nunnerley, 2008; Nunnerley, Hay-Smith, & Dean, 2013), and having explored employment following spinal cord injury (Hay-Smith, Dickson, Nunnerley, & Sinnott, 2013), I was aware of the difficulties associated with RTW after a traumatic injury. I started to consider the potential
difficulties of RTW for the individuals with residual disability as a result of their earthquake injuries, and what impact the disrupted physical, social and work environment would have on their RTW process. When I looked to the literature to find answers to my questions, there was limited information on the factors influencing the RTW in a post-earthquake situation. This thesis is my journey to answer those questions.

Work and employment are terms frequently used in the literature but, to date, there is little agreement on their definitions. The two terms are often used interchangeably but there are subtle differences between them. For the purposes of this thesis work is used to refer to:

*The application of physical or mental effort, skills, knowledge or other personal resources, usually involves commitment over time, and has connotations of effort and a need to labour ... Work is not only ‘a job’ or paid employment, but includes unpaid or voluntary work, education and training, family responsibilities and caring (Waddell & Burton, 2006) p 4.*

Employment is normally defined as remunerative work, which typically involves a contractual relationship between the employer and the worker (Waddell & Burton, 2006)

**1.2 Aims of the project:**

The primary aim of the research this thesis was to generate an explanation of the impacts on RTW for individuals injured as a result of the Christchurch earthquake. Two phases of study were used to achieve this aim:

- **Phase 1:** A systematic review of the literature to understand the levels of participation and health-related quality of life outcomes in individuals with earthquake-related injuries.

- **Phase 2:** A grounded theory inquiry to identify and describe the influences on RTW over time for people injured as a result of the February 22nd earthquake in Christchurch.

These two phases of research are used to produce a novel theory to describe the RTW of individuals with serious injury as a result of the Christchurch February 22nd earthquake.
1.3 The thesis structure

This thesis consists of a two-phase study investigating the factors influencing RTW in individuals injured in the Christchurch earthquake. Figure 1 shows the structure of the thesis. The purpose of this chapter is to outline the aims of the thesis.

Chapter 2 sets the scene of the thesis and presents the background to the Christchurch earthquake and sets out the NZ-specific context of the study.

Chapter 3 reviews the relevant literature on the outcomes of traumatic injury and details employment after traumatic injury.

Chapter 4 reviews the relevant literature on the outcomes from traumatic earthquake injuries and presents the methods and findings of Phase 1, the systematic review of the literature on the participation and quality of life outcomes of individuals with physical injury as a result of earthquake trauma.

Chapter 5 introduces the grounded theory methodology underpinning the qualitative enquiry. It describes the constructivist grounded theory methodology used for the qualitative phase of this research and describes the methods used for this study.

Chapter 6 is the first of three chapters presenting the findings from Phase 2, the grounded theory study investigating return to work for the individuals injured in the Christchurch February 22nd earthquake. This chapter presents the description of the participants and process for arriving at the substantive model, and an overview of the four categories.

Chapter 7 introduces the four categories of the model, namely: Rebuilding normality, Negotiating the RTW journey, Working within the system and the Earthquake experience.

Chapter 8 presents the integration of these categories and explains how they interact within the model.

Chapter 9 discusses the findings of the research in relation to the literature.

Chapter 10 sets out the conclusions from the study drawing the findings from both phases together. Reflections on the limitations of the research are presented along with recommendations of further research to build on the findings from this study.
Chapter 3
Literature review traumatic injury

Chapter 4
Literature review earthquake trauma and systematic review

Chapter 5
Methodology and methods

Chapter 6
The overview of results and introduction of theory

Chapter 7
The categories

Chapter 8
Integrating the findings - the theory

Chapter 9
Discussion

Chapter 10
Conclusions
2 Setting the scene

You miserable low life bastard.
We saw you on the fourth of September
Calling into town on your spineless spine, giving us a flick and looking us over.
It was an earthquake then for the yellow pages. Remember the torch, the bottles of water.
In September you were just the piano player, tinkling the ivories, thin moustache, pretty out there, eyeing the women on the dance floor.

Then my O my you waited!
I saw you the other day run up a blind alley full of hatred and dark breath.
Black clouds could only pity us.

You held us down on the jagged ground.
You shook the streets and the city buildings.
You tore the spire from the cathedral.
And all those people.
The tourists taking photographs, the babies taken in pairs, the hikers in the hills.
The ones buried beneath us still.
You miserable bastard of a thing!
The time has come said the drummer to the drum when I can make no sense of it.

Gary McCormack, New Zealand Herald, 2011

In order to set the scene for the thesis, this chapter begins by describing the events of the Christchurch, NZ, February 22nd Earthquake and provides background information on the NZ-specific agencies pertinent to the thesis.

The impact of the February 22nd Earthquake was significant for the residents of Christchurch and had a huge national impact on the economy of NZ. In total, 185 lives were lost and thousands were injured (Ardagh et al., 2012). The city’s central business district was left unrecognisable with millions of dollars of damage across the city. Over 150,000 homes were damaged in the earthquake with some residential areas of the city declared unfit for building (Parker & Steenkamp, 2012). Three years after the earthquake the aftershocks continue, and many residents are still displaced and waiting for repairs on their homes as the city of Christchurch slowly rebuilds.

2.1 Earthquakes in New Zealand

Earthquakes are not unexpected events in NZ, as NZ’s two islands sit in the southwest Pacific Ocean on the boundary of the Australasian and the Pacific Plates. According to
the Institute of Geological and Nuclear Sciences Ltd (GNS Science n.d) there are in excess of 15,000 earthquakes recorded in NZ each year, although only about one percent of these quakes are large enough to be felt. The records dating from the 1840s indicate several magnitude 6 earthquakes every year, one magnitude 7 every 10 years and a magnitude 8 every century will be experienced in NZ (http://www.gns.cri.nz/Home/Learning/Science-Topics/Earthquakes/New-Zealand-Earthquakes). The magnitude of an earthquake is the measure of actual physical energy released. The most universally used measure is the Richter scale, developed by Charles Richter in 1936, which is a 10-point logarithmic scale (Briggs, 2006). Earthquakes above 7.0 are considered strong and earthquakes above 8.0 are considered severe, being ten times more powerful than a magnitude 7 (Briggs, 2006). However, the strength of the earthquake alone does not determine its impact: it only becomes a major disaster when it affects highly populated areas and causes large scale human loss (Guha-Sapir & Vos, 2011). The most significant seismic event in recent NZ history is the 3rd February 1931 Napier earthquake, a 7.4 magnitude shake, which resulted in 256 deaths and necessitated a rebuild of the city (WHO Collaborating Centre for Research on the Epidemiology of Disasters, 2011).

2.2 The earthquakes in Christchurch

At 4:35 am on the 4th September 2010, Christchurch experienced its first major earthquake in living memory (Wilkinson et al., 2013), a 7.1 magnitude earthquake centred on the previously unrecognised Greendale fault in Darfield, 40 km west of Christchurch (The Darfield Earthquake) (Reyners, 2011). The Darfield earthquake caused structural damage to buildings. There were minor casualties reported as a result of the earthquake, but no fatalities. Multiple aftershocks continued after the earthquake causing anxiety and panic for the people living in Darfield and Christchurch. Although further aftershocks were predicted, these were anticipated to be of a lower magnitude than the Darfield earthquake. People felt the worst was over, and the city slowly started to adapt and recover.

Six months later at 12.51 pm on the 22nd of February 2011, a magnitude 6.3 earthquake struck the city of Christchurch (from this point on referred to as the Christchurch earthquake). This was a rupture of a separate fault line to the Darfield earthquake, and was centred only 10 km south-east of the city centre at a depth of 5 km.
Although the Christchurch earthquake was of a lower magnitude than the Darfield earthquake, it had unusually high peak ground accelerations (more than 2.2 times the acceleration due to gravity) - the highest on record internationally (Kaisera et al., 2012; Reyners, 2011). This had a major effect on the city, including power disruptions, road damage and liquefaction. Damage to buildings was significant, including the major collapse of two commercial buildings in the CBD.

2.2.1 Comparison with other earthquakes

At the time of the earthquake, Christchurch was NZ’s second largest city (population of 348,000 people) (Statistics New Zealand n.d), generating 15% of NZ’s gross domestic product (GDP). Following the earthquake, an estimated 8,000 buildings within the CBD and 10,000 residential houses needed to be demolished. The initial damage costs were estimated in excess of NZ $15 billion (Reyners, 2011) but this figure has risen, with later estimates suggesting the figure will be closer to NZ$30 billion (Parker & Steenkamp, 2012). The impact on NZ’s economy was huge; in terms of GDP from natural disasters in 2011, NZ was ranked highest, at 10% GDP costs, higher than the 2011 Japanese earthquake and tsunami, which was estimated at 3-4% of Japan’s GPD (Guha-Sapir & Vos, 2011; Parker & Steenkamp, 2012).

The impact of an earthquake has many determinants, and differences seen in the distribution of deaths and injuries are not only dependent on the magnitude and characteristics of the earthquake but also the location and the economic background of the community affected (Guha-Sapir & Vos, 2011) (Table 2.1). For example, although the number of people affected and the damage was less extensive in Christchurch than in Haiti or Pakistan, the costs of rebuilding and infrastructure repair are higher. The injury rates from the Christchurch earthquake were influenced by a number of factors. First, good access to the city was maintained throughout the earthquake period and the major road routes in and out of the city remained functional. There was only short term disruption to operations at the airport, which was closed for three hours; reopening at 4:26 pm for civil defence and, at 7:40 pm that evening, commercial flights resumed Ross, S. Safety Investigator/Air Traffic Controller Airways New Zealand (personal communication February 8, 2012). This enabled rapid access for search and rescue coordinators from other areas in NZ, and internationally, to travel to Christchurch.
Table 2.1 Comparison of previous worldwide earthquakes

<table>
<thead>
<tr>
<th>Earthquake</th>
<th>NorthBridge California USA</th>
<th>Christchurch New Zealand</th>
<th>Erzincan, Turkey</th>
<th>Kashmir Pakistan</th>
<th>Whenchuan China</th>
<th>Port-au-Prince Haiti</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>04:31</td>
<td>12:51</td>
<td>19:19</td>
<td>08:52</td>
<td>14:28</td>
<td>16:53</td>
</tr>
<tr>
<td>Magnitude</td>
<td>6.7</td>
<td>6.3</td>
<td>6.8</td>
<td>7.6</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Died</td>
<td>60</td>
<td>185</td>
<td>653</td>
<td>73,338</td>
<td>87,476</td>
<td>222,570</td>
</tr>
<tr>
<td>Injured</td>
<td>5,000</td>
<td>6000+</td>
<td>3850</td>
<td>128,309</td>
<td>374,649</td>
<td>300,000</td>
</tr>
<tr>
<td>Total affected*</td>
<td>27,000</td>
<td>301,845</td>
<td>348,850</td>
<td>5,128,309</td>
<td>45,976,596</td>
<td>3,700,000</td>
</tr>
<tr>
<td>Total damage USD</td>
<td>30,000</td>
<td>18,000,000</td>
<td>750,000</td>
<td>5,200,000</td>
<td>85,000</td>
<td>8,000,000</td>
</tr>
</tbody>
</table>

*Sum of injured, homeless and affected (data from the international disaster database (EM-DAT., 2006))

This is in contrast to other earthquakes, such as the 2005 Pakistan earthquake, which struck a remote area, destroying all road transportation, leaving inadequate air transportation to ferry the injured and provide supplies to the area (Rathore, Farooq, Muzammil, et al., 2008).

Another crucial factor was access to a functioning hospital. Christchurch Hospital, located on the edge of the CBD to the west of the city, sustained moderate damage in the earthquake but remained open and operational. This hospital provided advanced (Level 1) trauma services (Paice, 2007), and housed the city’s only Accident and Emergency Department. A structured emergency care response was implemented and surgical services were available at the hospital for those who needed it. Only fourteen patients were transferred out of the city to hospitals around NZ to receive care (Ardagh et al., 2012). Consequently, the injured earthquake survivors received a similar level of acute care from the health system that would normally be expected in NZ. This is very different from the experience in less developed countries where following an earthquake many victims require long transportation (time and distance) in inappropriate vehicles to reach medical care, or are treated in field hospitals (Bar-On et al., 2011). For example, following the Bam earthquake in south-east Iran, 12,000 people were transferred to hospitals across the country and dozens of field hospitals
delivered both emergency and day-to-day care for thousands of survivors (Akbari, Farshad, & Asadi-Lari, 2004). Similarly, following the 1992 Turkish earthquake, east of the city of Erzincan, there was destruction of medical facilities, meaning 500 injured survivors were transported out of the city in the first 24 hours, and a further 800 in the following 24 hours. This transportation of patients caused significant delays in people receiving surgery, and 48 patients had to wait in excess of six days to receive the surgery they required (Angus et al., 1997). The Sichuan earthquake resulted in as many as 200,000 injured people transported to other parts of the country (Chen, R., Song, Kong, Zhou, & Liu, 2009). In Christchurch, the Darfield earthquake had in some ways been a dress rehearsal for the Christchurch earthquake, with improved disaster preparedness because the hospital and other emergency services had already been tested, albeit on a much smaller scale.

The data capture from the Christchurch earthquake was more comprehensive than from earthquakes in other countries, which were frequently limited to admissions at individual hospitals or specific temporary aid camps (Bar-On et al., 2011; Mulvey, Awan, Qadri, & Maqsood, 2008). A database was set up by the Researching the Health Implications of Seismic Events (RHISE) group, and monitored by researchers and clinicians based at the Department of Emergency Medicine at Christchurch Hospital (Ardagh et al., 2012), to capture information on the casualties from the Christchurch earthquake. The RHISE database collected de-identified injury details of all casualties who reported to Christchurch Hospital, general practitioners, or those who lodged an injury claim with the Accident Compensation Corporation.

2.3 Context of the research

Because the study was conducted following the Christchurch earthquake, an explanation of contextual factors specific to NZ is required. First, the Earthquake Commission (EQC) provides natural disaster insurance of up to NZD$100,000 for residential property and NZD$20,000 personal effects cover in NZ. Premiums are collected as a disaster insurance premium through individual insurance companies and passed on to EQC. Where earthquake damage to contents or property is below the EQC cap, replacement or repair is arranged through EQC; any damage in excess of this amount is the responsibility of the insurance company. This system was the first contact
for the people of Christchurch to access funds for repairs to their damaged homes, including the injured earthquake survivors.

The second system level presence is that of the Accident Compensation Corporation (ACC) in NZ. This no fault insurance system provides personal injury cover for all NZ citizens, residents and temporary visitors to NZ. ACC currently funds all medical expenses arising from an accident, compensates for permanent impairment and provides earnings related compensation for those employed. Specifically, all the individuals injured as a result of the earthquake were covered by ACC (Accident Compensation Corporation, 2014).

In NZ, the RTW process after accident related trauma is managed by ACC. Approximately 1.5 million claims a year are usually processed by ACC for injuries relating to accidents and, of these, 65,000 claims result in more than one week off work (Accident Compensation Corporation, 2006). RTW is facilitated through a case management system with external assessments completed by ACC accredited providers.

Individuals who were previously employed receive 80% of the pre-injury wage in earnings related compensation from ACC, although this is capped (in 2012/13 this was $113,000) (Accident Compensation Corporation, 2013). As an injured worker returns to work at reduced hours, a proportion of their baseline wage is paid in addition to their weekly compensation, effectively topping up their compensation payments until full time employment is reached (defined as 30 hours a week by ACC). Clients are evaluated to determine their work capacity. If they are unable to RTW at normal duties a graduated RTW programme is initiated, monitored by an ACC-accredited vocational provider. The graduated RTW programme is goal orientated and time defined around the capacity of the injured worker. Often this process is implemented alongside a rehabilitation plan aimed to return the client to maximum capacity. These programmes are negotiated so they are suitable both for the injured worker and their employer. The Medical Disability Advisor and published recommendations guides the appropriate time off work anticipated for a particular injury (Accident Compensation Corporation, 2006; Reed, P., 2001). ACC offer a variety of programmes to facilitate RTW for an injured worker: 1) the above mentioned graduated RTW programme; 2) an employment maintenance programme, which focuses on maintaining employment where an
employer is unable to find alternative duties for the injured employee; 3) work ready programmes which address vocational suitability for jobs, and looks at work readiness and work routines for people who have lost their jobs; and 4) work preparation for individuals unable to return to their pre-injury employment and who require assistance to gain vocational independence (Accident Compensation Corporation, 2006).

A range of ACC staff deal with injured clients: case co-ordinators based in contact centres across NZ deal with claims that are up to 70 days duration; case managers are responsible for face-to-face management of longer term claims and are based out of ACC branches located across the country; and seriously injured clients are managed in a separate system led by a National Serious Injury Service support coordinator. Serious injuries are defined as SCI, severe (and sometimes moderate) traumatic brain injury (TBI) (NZGG, 2006) and other serious injuries such as multiple amputations or burns to over 50% of the body Vaughn-Jones, S Manager National Serious Injury service Southern ACC (personal communication August 26, 2012).

Vocational support under ACC is provided by contracted specialists. While entitlement has remained the same since the earthquake, ACC implemented a limited supplier model in vocational rehabilitation on the 1st March 2012. This approach (consisting of nine suppliers across NZ) was aimed at improving strategic relationships with vocational providers and improving the quality of service to clients. The Kaleidoscope Programme is one of the nine providers that work specifically with SCI clients to facilitate RTW. Unlike other programmes, Kaleidoscope is initiated during inpatient rehabilitation at NZ’s spinal rehabilitation centres in Auckland and Christchurch.

2.4 Summary

This chapter has outlined the contextual background to this research. The Christchurch earthquake was a significant event in NZ and created a complex situation which involved many system players. The extent of physical and personal devastation was immense and the wider impact on the city and residents of Christchurch is still ongoing.

The next two chapters will present the relevant literature, starting with the outcomes and consequences of traumatic injury, before considering earthquake injury.
3 Literature review traumatic injury

3.1 Introduction

The review chapters (Chapters 3 and 4) explore key concepts relevant to the research undertaken for this thesis. Chapter 3 presents the background to traumatic injury, beginning with the causes, consequence and outcomes of traumatic injury and, where possible, specific reference to NZ will be provided. Following this, the factors influencing RTW in traumatic injury with specific reference to the primary injury groups identified following the Christchurch earthquake namely, SCI, amputation and TBI, will be reviewed. Chapter 4 discusses the causes, consequences and outcomes of earthquake trauma and highlights the differences between trauma and earthquake trauma. The second section of the chapter presents the methods and findings of a systematic review of the literature on RTW and QoL following physical injury as a result of an earthquake.

3.2 Classification of trauma

Trauma is an injury caused through physical force to the body. Multiple trauma or multi-trauma can be defined as “the simultaneous injury to different organs or body parts, which together can result in systemic dysfunctions that may cause serious impairment or death” (Bouillon, Kreder, & The MI Consensus Group, 2002, p. 125).

The first attempts at rating the severity of trauma began in 1952, when De Haven devised a scale for a study of injuries in aeroplane crashes (Committee on Medical Aspects of Automotive Safety, 1971; Osler, Baker, & Long, 1997). In 1971, the Committee on Medical Aspects of Automotive Safety published the Abbreviated Injury Scale which focused on blunt trauma, specifically, motor vehicle injuries. The Abbreviated Injury Scale classifies injuries according to six categories of body systems: head or neck, face, chest, abdominal or pelvic contents, extremities or pelvic girdle, and external. These injuries are then rated in severity from one, a minor injury, to six, an injury fatal within 24 hours (Committee on Medical Aspects of Automotive Safety, 1971; Greenspan, McLellan, & Greig, 1985; Osler et al., 1997). The disadvantage of this scale was its inability to provide an overall score for multiple injuries. To address this, Barker et al. (1974) developed the Injury Severity Score (ISS). This ordinal scale ranging from one to 75, is calculated from the sum of the squares of the Abbreviated
Injury Score for the three most severely injured body regions (Stevenson, M., Segui-Gomez, Lescohier, Di Scala, & McDonald-Smith, 2011). A score of over eight is recognised as a moderate injury while a score of over sixteen constitutes a serious injury (Barker et al., 1974; Bouillon, Kreder, & The MI Consensus Group, 2002; Collopy et al., 1992). This classification has been internationally recognised and widely used (Stevenson, M. et al., 2011) and allows for easy comparisons across the international literature. A further adaptation to the ISS has been developed, The New Injury Severity Scale (NISS), which is the sum of the squared Abbreviated injury Score of the three most severe injuries regardless of body region (Osler et al., 1997). The changes adopted in the NISS were designed to accommodate for multiple injuries in one body region, which were not recognised as serious on the ISS, where only one injury in the body region could be included. The NISS has been slower to gain universal acceptance and has been used less extensively in the literature.

The American Spinal Injury Association Impairment Scale (AIS) is a SCI specific impairment measure which grades ten key muscles to assess muscle innervation and 28 sensory points to assess sensation (Maynard et al., 1997). The scale produces a motor and sensory score as well as determining an overall neurological level and an impairment score. The impairment score has a graduated range from A, which is complete motor and sensory loss below the level of the injury, through to E, which is normal motor power and sensation.

Traumatic brain injury severity can be classified using the Glasgow Coma Score (GCS). The scale comprises of the aggregate score of three parameters: best eye response, best verbal response and best motor response. TBI can be described as mild (GCS score of 13–15), moderate (GCS of 9–12), or severe (GCS of 3–8) (Carroll, Cassidy, Holm, Kraus, & Coronado, 2004).

There is no specific scale of severity of amputation; rather the site of amputation provides an idea of the severity and functional consequences that may arise.

While measures such as the ISS, AIS and GCS are useful to classify the severity of trauma, or specific injuries, there are a number of other models that describe the psychosocial consequences of a health condition or injury. This thesis will use the World Health Organisation (WHO) International Classification of Functioning, Disability and Health (ICF) (World Health Organisation, 2001) as a conceptual model.
to describe the impact of injury and to maintain a consistent language throughout this thesis.

The ICF superseded the ICIDH-2, a model criticised by the disability community for the negative terminology and for neglecting the role of the environment within the model (Cieza & Stucki, 2008). The ICF has been widely accepted in clinical and research settings (Cerniauskaite et al., 2011) as a bio-psychosocial model that considers the consequences of the injury related to a disease or health condition. The ICF considers body structures and functions, activities and participation in life situations as well as contextual considerations of the environment and personal factors. By including the environment and personal factors the ICF achieves an integration of the two previous paradigms used to understand and explain functioning and disability, the medical and social model of health. The medical model views disability as a consequence of disease which affects the person, and social model of health views disability as a consequence of social and environmental barriers (Cieza & Stucki, 2008).

Disability describes impairments to body functions and structures, limitations in activities, and restrictions in participation (Stucki, Cieza, & Melvin, 2007); it encompasses disability as a consequence of the social environment (environmental factors) and not just as a consequence of the disease or health condition. The model incorporates multidirectional relationships, which are represented as arrows in the diagram below (Figure 3.1).

The ICF acknowledges the reciprocal influences of one domain over another, providing a dynamic aspect to the model (Duggan, Albright, & Lequerica, 2008). In addition, the ICF provides a universal language for disability, providing agreed clearly defined terms (Stucki et al., 2007).

QoL is defined by WHO, as “an individual’s perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (The WHOQOL Group, 1998, p. 551). There is no agreed definition of QoL, so this is just one definition among multiple conceptualisations. This makes QoL a difficult construct to measure (Dijkers, 1999, 2003, 2007; Lin, Lin, & Fan, 2013; Mandzuk & McMillan, 2005; Moons, Budts, & De Geest, 2006).
Although QoL is not included as a separate construct within the ICF, it is conceptualised around a number of categories: normality, social utility, utility, happiness, satisfaction with life and satisfaction of specific domains (Moons et al., 2006). Some authors consider that conceptually QoL may be close to an individual’s subjective satisfaction with their participation (Whiteneck et al., 2004). The ICF can be used to describe both health and non-health related aspects of objective well-being and can serve as a basis for the operationalisation of QoL (Cieza & Stucki, 2008). Bakas T et al. (2012) suggested that the ICF lacks measures determinants of health, management of risk factors, and self-management so as to truly measure QoL.

Given the health context of the thesis, a medical approach has been utilised to describe the consequence of impairment, i.e. people with disabilities rather than adopting a social model which argues people are not ‘with’ disability, but rather are disabled by their environment and so they ‘experience disability’ or are ‘with impairment’ (Hammel, 2006).

### 3.3 Causes and patterns of trauma

In order to establish the differences in earthquake trauma (and outcomes, it is important to first consider the causes and consequences of trauma. In Australia and NZ, trauma is the leading cause of death in people under 45 (Curtis, Caldwell, Delprado, & Munroe,
The majority of trauma in Australasia is blunt road trauma related to motor vehicle collisions (34%); falls account for the second highest proportion of injuries (22%), followed by motorbike collisions (8%), cyclists (4%) and other transport (11%) (Curtis et al., 2012). Most trauma cases are males (Curtis et al., 2012; Paice, 2007; Urquhart, D.M. et al., 2006) aged between 15 and 24 years old (Paice, 2007). There is limited information on NZ-specific trauma outcomes. One exception is an audit of trauma deaths gathered from three major trauma centres in Auckland (Pang, Civil, Ng, Adams, & Koelmeyer, 2008), which reported 186 trauma deaths over a twelve-month period in 2004. These were predominantly males with a mean age of 36.5. The audit identified mechanisms of injury similar to Curtis et al. (2012) but appeared to have a disproportionately higher death rate due to hanging (36%). Most deaths in Auckland occurred before arrival at hospital (Pang et al., 2008). A literature review of patterns and causes of death from trauma in Level 1 hospitals (highest level capacity) worldwide between 1980-2008 (Pfeifer, Tarkin, Rocos, & Pape, 2009), identified 22 articles from a range of countries, and showed 84% of patients sustained blunt trauma, with a median ISS of 38 points. They also found 53-69% of deaths occurred before admission, with central nervous system injury being the main cause of death (Pfeifer et al., 2009).

Traumatic injury encompasses a wide range of injuries, including single fractures to complex multiple fractures and injuries, such as SCI, TBI and amputations, which cause long term impairments. SCI commonly results from traumatic injury, with a worldwide incidence of between 10.4 and 83 per million people a year (Wyndaele & Wyndaele, 2006). There is no national database for SCI in NZ, but the incidence rate of SCI in NZ has been estimated at 30 per million (Derrett et al., 2012). This estimate is lower than reported in an earlier study by Dixon et al. (1993) who showed an incidence of 49 per million. Both studies showed a higher incidence in males with the majority sustaining incomplete injuries (AIS B-D). Cervical injuries are the most common both in NZ (Dixon et al., 1993) and worldwide (van den Berg, Castellote, Mahillo-Fernandez, & de Pedro-Cuesta, 2010). Young men are three times more likely to have SCI than women, with a mean age at injury of 33 years (Wyndaele & Wyndaele, 2006).

Traumatic brain injury results from direct trauma or its consequences, including hypoxia, intracranial haemorrhage and raised intracranial pressure. The incidence of TBI in NZ is reported to be 790 cases per 100 000 people (Feigin et al., 2013). Feigin et al. (2013) found TBI was more common in males in two peak age groups: children
aged 5-14 years and children aged 15-34 years. TBI severity is classified using the Glasgow Coma Score and can be described as mild (GCS score of 13–15), moderate (GCS of 9–12), or severe (GCS of 3–8) (Carroll, Cassidy, Holm, Kraus, & Coronado, 2004). The majority of TBI in NZ is mild (Feigin et al., 2013).

Traumatic amputations represent only a small proportion of the amputee population (Perkins, De'Arh, Sharp, & Tai, 2012) as most amputations are performed for peripheral arterial disease. Perkins et al. (2012) reports traumatic amputations make up 7-9% of all UK amputations performed annually. Bilateral amputations are less common than single amputations. Over a 12-month study of traumatic limb amputations in a US trauma centre only 12 out of 74 (16%) lower extremity amputations performed were bilateral. The majority of traumatic amputees are male (77.8%) with a mean age of 38.1 years (Kobayashi et al., 2011). Fewer than 5% of civilian trauma amputations are above knee amputations (AKA), although they are more common in military settings (Penn-Barwell, 2011).

### 3.4 Outcomes of trauma

This section discusses the outcomes of trauma including the consequences on an individual and wider societal level, and provides contextual information on the expected outcomes of trauma. How this relates to RTW will be discussed in detail in Section 3.5.

For every trauma fatality, six people survive to be discharged from hospital (Curtis et al., 2012). In NZ, Paice (2007) reported an average length of hospital stay following major trauma of 16 days, with almost half (49%) of those requiring an intensive care admission; however, Paice did not clearly define ‘major trauma’. Although some individuals make a full recovery, many trauma survivors experience long term disabling consequences from their injuries (Anke et al., 1997; Dimopoulou et al., 2004; Holtslag, Post, Lindeman, & van der Werken, 2006; Holtslag, Post, van der Werken, & Lindeman, 2007; Holtslag, van Beec, Lindeman, & Leenen, 2007; Lehmann et al., 1999; Mkandawire, Boot, Braithwaite, & Patterson, 2002; Richmond, 1997; Seekamp, Regel, & Tscherne, 1996). The consequences of trauma are far reaching, with the impacts of injury being felt by the individual, family, friends and whanau (wider family group), as well as the community. Trauma creates a significant economic burden, initially from acute health and rehabilitation costs, and then from long term disability.
costs, such as insurance costs, lost work productivity and the reduced economic contribution from the injured (Curtis et al., 2012). In 2005, the total of medical and loss of productivity costs from motor vehicle injuries in the USA were reported to be in excess of $99 billion dollars (Naumann, Dellinger, Kaloshnja, Lawrence, & Miller, 2013). By comparison, in NZ, the social and economic costs of injury in 2008 using ACC data were estimated to be $NZ 6-7 billion (Curtis et al., 2012).

Improvements in surgical procedures and hospital care over the last few decades have resulted in higher survival rates for trauma patients. This has prompted a paradigm shift where survival is no longer a sufficient outcome, instead maximising function and, more recently, participation and QoL outcomes are seen as important (Bouillon et al., 2002; Livingston, Tripp, Biggs, & Lavery, 2009). However, this change of focus towards QoL and participation may relate more to the growing evidence that the societal costs resulting from traumatic injury are now higher than the direct medical costs from the trauma.

A growing body of literature documents recovery from trauma but the interpretation of this is complicated by the heterogeneity of trauma patients, which includes diverse types and severity of injuries, the variety of outcome measures used in the research and the divergent time frames investigated. In a non-systematic review of outcomes following severe trauma (classified as an ISS >16) the heterogeneity of the articles reviewed prohibited a comparative analysis of the literature (Halcomb et al., 2005). The authors instead identified five recurring themes in the literature: a long-term loss of productivity; psychological consequences of injury; a connection between reduced outcomes following trauma and drug and alcohol use; a lack of support throughout recovery from traumatic injury; and the influence of geographical location and provider preferences that affect rehabilitation.

It has been consistently shown that trauma patients experience decreased levels of functioning and QoL for a prolonged period after injury. A complex mix of factors influence outcomes after traumatic injury, and include injury severity, age, sex and psychological factors. Most of the reported studies consist of retrospective or prospective cohort studies (Clay, Newstead, & McClure, 2010; Halcomb et al., 2005). Although these studies provide insight into the influence of isolated factors on the outcome of severe trauma, how these multiple factors interact to influence outcomes
remains unclear. While the use of multivariate models has progressed knowledge on the combinations of factors that influence outcomes, they still fail to answer how they interact and in what way they influence recovery.

Unsurprisingly, the physical limitations of trauma are greatest close to the time of injury (Kiely, Brasel, Weidner, Guse, & Weiglt, 2006; Lee, Chaboyer, & Wallis, 2008; Michaels et al., 2000). In a prospective study of trauma survivors in Hong Kong twelve months after injury Rainer et al. (2014) found that less than one in ten patients made an excellent recovery. Although function improves with time, impairments have been shown to continue for years after injury (Anke et al., 1997; Connelly, Chell, Tennant, Rigby, & Airey, 2006; Holtslag et al., 2006; Mkandawire et al., 2002; Soberg, Finset, Roise, & Bautz-Holter, 2012) and functional limitations remain in nearly half of people with serious trauma (Holtslag et al., 2007b; Livingston et al., 2009).

Severity of injury was one of the first factors identified to influence outcome, and people with more severe injuries report more negative consequences after trauma (Dimopoulou et al., 2004; Harris, Young, Rae, Jalaludin, & Solomon, 2008; Lehmann et al., 1999; Rhodes, Aronson, Moerkirk, & Pentrash, 1988; Vles et al., 2005). However, ISS alone fails to account for the variance of disability outcomes in people who experience traumatic injury. The ISS has been criticised for failing to take into account the pattern of the injury, as the location or pattern of injury may have more impact on outcome than the ISS suggests. Mkandawire et al. (2002) found continuing disability was more likely in cases of multiple extremity injuries or with a combination of pelvic and upper extremity injuries compared to single fractures; which are missed by using ISS alone. Many of the trauma studies exclude participants with neurological impairments and SCI and TBI injuries and they have been found to have worse outcomes.

In addition to injury characteristics, demographic differences, pre-injury employment, education, and psychological stress, have all been found to influence outcomes after trauma. Women have been shown to have worse outcomes than men after trauma (Holbrook, Hoyt, & Anderson, 2001; Vles et al., 2005). Although Vles et al. (2005) could not explain this poorer outcome in women, they hypothesised physiologic, psychological and social differences may have influenced outcomes. Being younger at the time of injury is associated with better outcomes (Holtslag et al., 2007a; Lehmann
et al., 1999; Tøien, Bredal, Skogstad, Myhren, & Ekeberg, 2011). Connelly et al. (2006) showed non-injury factors such as pre-injury employment and education influenced the outcome after trauma; this supported the findings of Mock et al. (2000), who showed that impairment was not the most important indicator of disability, instead over 50% of the differences in disability result from the multiple characteristics of patients, including age, socioeconomic influences, social support and pre-injury health. Richmond et al. (1998) found positive thoughts, location of injuries and education were the main predictors of outcomes at three months post injury. In an earlier study, Richmond (1997) measured disability in a sample of participants with non-neurological injuries using the Sickness Impact Profile. She found age, pre-injury disability, post injury functional status, and post-traumatic psychological stress explained 67% of the variance in disability outcomes. She argued that injury contributes to disability primarily through functional limitations. She postulated that age alone may not influence disability, rather age had a complex direct (older participants had less injury) and indirect (older participants had more pre-injury disabilities and functional issues) influence on disability three months post injury. She concluded that the type of injury was not predictive of outcome but may be a reflection of the exclusion of central nervous system injuries in her study.

Physical functioning as a marker of recovery has limitations as it does not provide an understanding of the personal experience of injury or the wider impact on the individual, so QoL has become a popular measure of health outcome (Lin et al., 2013), and is increasingly used in health research (Moons et al., 2006). After trauma, HRQoL does not reach the same level as in the general public (Aitken et al., 2007; Tøien, Bredal, et al. 2011). Even six to nine years after trauma a Danish study by Overgaard, Høyer and Christensen (2011) showed the HRQoL in a trauma group was significantly lower than a non-trauma control group.

### 3.4.1 Psychological effects of trauma

Although this study concentrates on individuals with physical injury, the psychological effects of injury must be acknowledged. Post-Traumatic Stress Disorder (PTSD) is recognised as a potential psychological consequence of any trauma (Javidi & Yadollahie, 2012). PTSD is diagnosed by the presence of multiple symptoms, such as:

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1 A scale of physical and psychosocial measure comprising 12 subscales. The score rates from 0-100, with 100 indicating the highest level of disability.
reliving the event; avoidance of situations and reminders of the event; and feelings of numbness and hyper-arousal (Kuo, Wu, Ma, Chiu, & Chou, 2007) persisting for over one month (Kenardy & Dunne, 2011). Symptoms result in distress or impairment in functioning or social occupation (Brunello, Davidson, Deahl, Kessler, & et al., 2001). An individual’s presentation of PTSD is variable because of the diverse range of PTSD symptoms. While it is estimated that a third of the population will experience a severe trauma in their lifetime (Brunello et al., 2001), only 10-20% of those exposed to trauma are predicted to develop PTSD, although some studies have reported rates of 40% (von Rüden et al., 2013). The prevalence of PTSD in the general population has been estimated at three to six percent (Brunello et al., 2001; Haagsma et al., 2012), with a figure specific to NZ of 6.1% (Javidi & Yadollahie, 2012).

In summary, although a percentage of people make a good recovery from trauma the evidence is fairly conclusive that initially post injury trauma survivors have reduced QoL and function. Improvements are seen up to nine years post injury; however, functional limitations remain, particularly physical functioning. Multiple factors may influence outcomes following trauma, including injury characteristics, demographic and personal factors, but the degree to which they influence disability are yet to be determined.

### 3.5 Return to work

Work is important for many reasons. In Western society work provides financial incentives and a means of providing required economic resources, but also conveys social standing, purpose and self-esteem (Dunn, D.S. & Brody, 2008). Work can be beneficial for maintaining fitness and overall health and can produce therapeutic benefits (Waddell & Burton, 2006). Work and identity are closely intertwined, and work contributes a central component of our identity (Watson, 2008). For many people work is fundamental to their social life, with much of a person’s waking time spent in employment (Statistics New Zealand, 2011). Conversely worklessness can have a negative impact on a person’s well-being in a society where working is the norm (Waddell & Burton, 2006).

#### 3.5.1 Measuring return to work

The literature on RTW after multi-trauma is vast, involving research across multiple disciplines, such as medicine, sociology, psychology and economics. A number of
factors confound the measurement of RTW; these include differences in the definition of work, methods of measurement and the variables studied. First, there is inconsistent use of the word ‘work’ with multiple definitions used throughout the literature and, in some cases, the definition is absent. While some authors use a narrow definition of work, which includes only remunerative work (employment), others use a wider definition encompassing additional meaningful activities individuals use to fill their day (Noreau, Dion, Vachon, Gervais, & Laramee, 1999). DeJong and Hughes (1982) applied a broad definition of work, and produced a model of productivity outcomes; namely, gainful employment, home making, school or education programmes, community organisations and leisure time activities, which they thought better defined the useful ways people spend their time.

Second, there are multiple ways to measure RTW (Krause, N., Frank, Dasinger, Sullivan, & Sinclair, 2001; Wasiak et al., 2007). RTW involves multiple stakeholders: the employer; the employee; their family, health care and vocational workers; and the insurer (in NZ this is usually ACC). From a wider societal perspective there are also political, economic and legislative issues. These different stakeholders may have competing goals and different perspectives on what constitutes successful RTW (Young, Wasiak, et al., 2005). Consequently, there is little consensus on the most meaningful way to measure employment (Vogel, Barker, Young, Ruseckaite, & Collie, 2011). Typically, a single metric is used to evaluate the success of RTW, such as hours of paid work, RTW rates, and sick leave or absent days. These measures may favour the employer or stakeholder’s perspective, rather than the worker. Vogel et al. (2011) illustrate this point in a study which used different metrics to measure RTW in a group of 414 participants with orthopaedic and musculoskeletal injuries. The RTW rate varied depending on which metric was used. For example, if employment at any time point after injury was the metric, 84% of their participants could be reported as having returned to work, but these figures reduced to 74% if employment at the time of the research survey was the measure used, and reduced further to 58% if RTW at pre-injury hours was measured, demonstrating a change of 26% that could be achieved by changing the metric alone.

Return to work was conceptualised as a multi-stage process by Young, Roessler, et al. (2005) who described four stages of RTW: off work, work re-entry, work retention and work advancement. They felt without insight into all four stages of RTW, a limited
approach to what constitutes ‘a good outcome’ will necessarily eventuate, and multiple metrics may be needed to gather meaningful information (Vogel et al., 2011). This detailed level of information is often only available from the worker themselves (Steenstra, Lee, de Vroome, Busse, & Hogg-Johnson, 2012), which suggests the best information to measure RTW should be collected from multiple stakeholders, including the worker.

Third, the population studied is an important consideration. Trauma employment research is complicated by the differences in the populations studied, as previously discussed (see Section 3.4). Participants may be grouped in mixed diagnosis by injury severity sub groups, or specific clinical diagnosis groups, such as SCI, TBI, or musculoskeletal injuries. In addition, studies frequently only include participants who were employed before their injury. While this allows for before and after injury comparisons in RTW rates, it potentially distorts the employment rates because it fails to take into account people who gain work after injury who were previously not engaged in paid employment. Moreover, this limits the understanding of RTW outcomes of people who were unemployed at the time of injury and does not consider people who were studying or contemplating a RTW.

Finally, the variables evaluated within studies differed considerably. The wide range of variables investigated included: characteristics of the individual, injury, job and employer, but also societal characteristics such as insurance, legislation and vocational assistance available to assist RTW (Krause, N. et al., 2001). A recent systematic review examined prognostic factors for RTW following acute orthopaedic trauma regardless of injury severity. In the 15 papers reviewed 68 different prognostic variables were investigated, while only 14 were investigated in more than one cohort. This inconsistency meant no conclusive results could be drawn from the review (Clay, Newstead, & McClure, 2010). In addition, the variables which influence RTW may not remain static and their importance/relevance may change over time. As discussed earlier (Section 3.2), there are changes in impairment levels from acute to chronic traumatic injury, so it is likely that the influence of these variables on RTW may be best identified through longitudinal studies rather than studies that concentrate on a single time point, as they may change in importance over the different stages of RTW.
Using a combination of theoretical or conceptual models may be a useful way to interpret results about RTW. The ICF can provide a framework to conceptualise the biopsychosocial issues of RTW while a conceptual model, such as the one developed by Young, Roessler, et al. (2005), can be used to interpret the influence of variables at different stages of the employment process.

3.5.1.1 Work-Ability

Work-ability is a person’s capacity to deliver on the environmental, social, physical and organisational demands made upon them in their work (Fadyl, McPherson, Schluter, & Turner-Stokes, 2010). Work-ability considers both the individual’s ability to RTW and their capacity to continue with sustained work. According to Csikszentmihalyi (1993, p. 41), “A fully meaningful life depends on the ability to find occupations that are challenging, yet within the scope of our abilities.” There are multiple measures used to assess work capacity (Fadyl et al., 2010); however, the capacity to work is used to establish a person’s ability to work, but may be assessed outside the work environment. Potentially, work-ability issues may not be realised until an individual has returned to work and their capacity to sustain long-term employment is tested.

Fadyl et al.’s review of the literature identified six factors which were important to work-ability: physical function; psychological function; thinking and problem solving skills; social and behavioural skills; workplace; and factors outside the workplace (2010). Unfortunately, to date, neither the individual contribution of each factor nor the specific interactions of these factors that achieve successful work-ability has been determined.

In summary, measuring RTW after traumatic injury is confounded by multiple factors - the definition of work used, the measurements used and the timing of the measurement, as well as the variables considered. In addition, inconsistencies of measures of employment and differences in the populations studied mean evaluation of the multi-trauma employment literature is complex.

3.6 Return to work in the trauma population

Return to work has been established as a key participation goal following any injury because it can promote rehabilitation and recovery (Waddell & Burton, 2006), and is associated with improved QoL and health outcomes (Giaquinto & Ring, 2007; Lidal,
Employment encourages full societal participation and independence (Waddell & Burton, 2006) and contributes to the economy. Returning an injured person to the workforce also has financial implications for insurance companies who provide work related compensations, such as ACC in NZ.

Evidence indicates that working after injury can minimise the potential detrimental mental and social effects of long term absence from work, providing the demands of work match the person’s capacity (Waddell & Burton, 2006). The next section will review RTW rates in the trauma population and the variables that may influence RTW in that population using the ICF framework.

3.6.1 Return to work rates
Despite the identified benefits of RTW, individuals who have experienced trauma remain unemployed at higher rates than the general public (Clayton et al., 2011). RTW rates appear to vary among the injury groups of SCI, TBI and amputees. A systematic review by Lidal et al. (2007) identified a RTW rate of 21-67% in people with SCI, based on 123 studies published between 2000 and 2006. A subsequent review, which covered a wider time frame, found an average RTW rate of 35%, ranging from 3-80% (Ottomanelli & Lind, 2009). The differences in RTW rates were attributed to differences in the definitions of employment, and the methods and timing of RTW, as well as the sample characteristics across the studies included. Specific to NZ RTW, the rates for the SCI population have been shown to be between 33% (Robertson, 1999) and 50% (Sinnott, Verkaaik, & Nunnerley, 2008).

Reported RTW rates after amputation also vary. Herbert (2006) found RTW rates of 58% (a range of 0-1664 days of total disability) in a population of traumatic work-related lower limb amputation. A review of the literature reported a RTW rate of about 66% following lower limb amputation, although this included both traumatic and non-traumatic amputations (Burger & Marineck, 2007). Penn-Barwell (2011) reported a higher RTW, approximately 70%, regardless of amputation level, while in a study looking specifically at bilateral lower limb amputation, Smith et al. (2005) found a RTW of 16%.
In traumatic brain injury a systematic review van Velzen, van Bennekom, Edelaar, Sluiter, & Frings-Dresen (2009) showed a RTW of 41% in a pooled overall estimate of the TBI studies reviewed. In the review two fifths of people with TBI had returned to work by one year post injury and this remained unchanged at two years post injury.

It is more difficult to describe RTW rates in the multi-trauma group as it contains a range of different injury types. This group is usually differentiated by injury severity and may or may not exclude neurological injuries such as SCI and TBI. The reported RTW rate following multi-trauma varies widely in the literature with rates between 27% (Morris, Sanchez, Bass, & MacKenzie, 1991) and 90% (Redmill, McIlwee, McNicholl, & Templeton, 2006) (Table 3.1). Although both these studies reported employment rates in severely injured participants, the time post injury was very different, with a mean of 2.6 years and 12 years follow up respectively. Morris, Sanchez, Bass and MacKenzie (1991) found a RTW rate of only 27% but reported a return to productivity of 54.5% in their study group.

The variation in the rates across the studies are due to the different definitions of work, differences in participants’ characteristics, including the injury characteristics, the way it is measured, the time since injury and contextual factors specific to each country. RTW has been evaluated at multiple time points following injury (Table 3.1). A consensus group meeting in 2002 recommended RTW should be evaluated at one and two months post injury (Bouillon et al., 2002). It is likely that by two years post injury maximum functional recovery has been achieved, rehabilitation is complete and the individual has returned to community life. Minimal further changes in function are expected between two and five years post injury (Soberg et al., 2012); however, as discussed in Section 1.3, some individuals with trauma still have functional impairments many years after injury.
Table 3.1 Return to work rates following multi-trauma

<table>
<thead>
<tr>
<th>Author</th>
<th>Population</th>
<th>Number</th>
<th>Time since injury</th>
<th>RTW Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>MacKenzie et al. (1987)</td>
<td>Multi-trauma minor to severe injuries</td>
<td>266</td>
<td>6 months</td>
<td>44% employed full time</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 year</td>
<td>56% employed full time (additional 5% working part-time)</td>
</tr>
<tr>
<td>Rhodes et al. (1988)</td>
<td>Patients admitted to trauma centre by helicopter</td>
<td>292</td>
<td>6 months -2.5 years</td>
<td>75.3% returned to former work status* (including non-remunerative work)</td>
</tr>
<tr>
<td>Frutiger et al. (1991)</td>
<td>Severely injured patients ISS &gt;18</td>
<td>223</td>
<td>5 years</td>
<td>79% working* and earning living (hours and definition of work not specified)</td>
</tr>
<tr>
<td>Holtslag et al. (2007a)</td>
<td>Severely injured patients ISS&gt;16</td>
<td>214</td>
<td>12-15 months</td>
<td>58.4% full time - former employment 21.5% part-time employment* 20.1% unemployed</td>
</tr>
<tr>
<td>Morris et al. (1991)</td>
<td>High cost patients</td>
<td>88</td>
<td>1 - 2.5 years</td>
<td>27.8% RTW* (full or part-time) 54.5% return to productivity (work school and housework)</td>
</tr>
<tr>
<td>Glancy et al. (1992)</td>
<td>Patient admitted to Level 1 trauma centre for at least 24 h</td>
<td>441</td>
<td>6 months</td>
<td>79.8% return to productivity* (work, homemaking education) 78.9% RTW*</td>
</tr>
<tr>
<td>Anke et al. (1997)</td>
<td>Severely injured patients ISS &gt;16</td>
<td>69</td>
<td>3 years</td>
<td>81%RTW or education*</td>
</tr>
<tr>
<td>Grotz et al. (1997)</td>
<td>ISS ≥ 36.8 with multiple organ failure</td>
<td>50</td>
<td>5 year</td>
<td>60% RTW* (not including housewife)</td>
</tr>
<tr>
<td>Study</td>
<td>Description</td>
<td>Sample Size</td>
<td>Follow-up</td>
<td>RTW or Education</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-------------</td>
<td>-----------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Michaels et al. (2000)</td>
<td>Patients with severe Neurotrauma</td>
<td>240</td>
<td>1 year</td>
<td>64% RTW*</td>
</tr>
<tr>
<td>O'Donnell, Creamer, Elliott, Atkin, and Kossmann (2005)</td>
<td>Patients admitted to trauma centre (range of ISS)</td>
<td>363</td>
<td>1 year</td>
<td>77% RTW*</td>
</tr>
<tr>
<td>Post, Van Der Sluis, and Ten Duish (2006)</td>
<td>Severely injured patients ISS &gt;16</td>
<td>53</td>
<td>1-2 years</td>
<td>87% RTW (of those employed pre-injury. 29% of those RTW had changed job or hours of work)</td>
</tr>
<tr>
<td>Soberg, Finset, Bautz-Holter, Sandvik, and Roise (2007)</td>
<td>Severely injured patients NISS &gt;15</td>
<td>100</td>
<td>1 year</td>
<td>28% complete RTW/education</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 years</td>
<td>43% complete RTW/education</td>
</tr>
<tr>
<td>Soberg, Roise, Bautz-Holter, and Finset (2011)</td>
<td>Severely injured patients NISS &gt;15</td>
<td>100</td>
<td>5 years</td>
<td>49% complete RTW/education</td>
</tr>
<tr>
<td>Weninger et al. (2008)</td>
<td>Patients admitted to a Level 1 trauma centre</td>
<td>192</td>
<td>2 years</td>
<td>61.5% RTW (more than half were part-time or at a different job)</td>
</tr>
<tr>
<td>Overgaard et al. (2011)</td>
<td>Trauma patients with a ISS ≥ 9</td>
<td>153</td>
<td>6-9 years</td>
<td>52% RTW or education*</td>
</tr>
<tr>
<td>Iakova et al. (2012)</td>
<td>Orthopaedic trauma of the back and upper and lower limb</td>
<td>411</td>
<td>2 years</td>
<td>58.5% RTW*</td>
</tr>
<tr>
<td>Redmill et al. (2006)</td>
<td>Patients with a ISS 15&gt; from a random selection of hospitals</td>
<td>138</td>
<td>12 years</td>
<td>90% RTW*</td>
</tr>
</tbody>
</table>

*No hours specified
There is a complex relationship between RTW and time post injury, which varies across injury types and severity. In multi-trauma, generally RTW rates increase with time post injury (MacKenzie et al., 2006; Rhodes et al., 1988; Soberg et al., 2011), perhaps related to recovery time frames and rehabilitation length. Conversely, it is recognised with musculoskeletal conditions that the likelihood of RTW is diminished with increased time off work (Foreman et al., 2006). RTW is typically measured at a single time point, but the increase in RTW rate is seen more clearly when RTW is assessed over time in the same participants. Soberg et al. (2011) carried out a prospective study of 101 severely injured multi-trauma patients (with a mean NISS of 35.1, indicating a very severe injury) treated in a Norwegian trauma centre, to determine RTW rates one, two and five years post injury. They found a RTW rate of 28% at one year which increased to 43% at two years post injury, with 49% of participants RTW at five years post injury. This was also seen in a study by MacKenzie et al. (1987) when they evaluated RTW at six months and at one year post discharge from hospital after a traumatic injury. Forty-four percent of their participants were employed full time at six months and 56% by one year post injury. Similarly, Rhodes (1988) followed up their participants at six and 36 months post injury and, again, at three to four years post injury and found half of those not working at the initial assessment had found employment by four years post injury. The type of injury can influence the length of time taken to RTW. Schoppen, Boonstra, Groothoff, de Vries, et al., (2001) found a mean time to RTW following amputation of around two years. A systematic review of RTW following lower limb amputation found RTW times ranged from nine months up to 2.3 years (Burger & Marincek, 2007). In contrast, RTW following SCI takes longer, with an average of nearly five years from SCI to first RTW (Krause, J.S., Terza, Saunders, & Dismuke, 2010; Ramakrishnan, Mazlan, Julia, & Abdul Latif, 2011) and longer to full time employment (Krause, J.S., Terza, Saunders, et al. 2010). However, these time frames are reduced when people return to the same employer (Krause, J.S., Terza, Saunders, et al., 2010; Ramakrishnan et al., 2011). It may be that the differences in the time taken to RTW for the different injury types are related to the length of rehabilitation and recovery time, or that adaptations required in the workplace differ between injury types. In SCI and TBI a time frame of two years is commonly considered the period required for individuals to reach their full functional capacity (Consortium for Spinal Cord Medicine, 1999; van Velzen, van Bennekom, van Dormolen, Sluiter, & Frings-Dresen, 2011). A qualitative study looking at return to
participation in NZ found participants were unwilling to plan participation goals, such as RTW, before the second year anniversary of their injury, as they wanted to maximise their recovery (Nunnerley et al., 2013).

Vocational rehabilitation is “a multi-professional evidence-based approach that is provided in different settings, services, and activities to working age individuals with health-related impairments, limitations, or restrictions with work functioning, and whose primary aim is to optimize work participation” (Escorpizo et al., 2011, p. 130). The most effective type of vocational input has not been established; however, there is growing evidence supporting early intervention (Waddell, Burton, & Kendall, 2008). Vocational rehabilitation may influence the timing of RTW (Waddell et al., 2008).

Job sustainability has received less attention in the RTW literature, perhaps a reflection of the lack of longitudinal RTW research. Even when two sequential time periods have been assessed, attention to job sustainability has frequently been neglected, i.e. it is not clear if the individuals remained in the same employment between time points, or if the hours of employment or job had changed (Soberg et al., 2011; Vogel et al., 2011). As mentioned previously (Section 3.4.1), RTW rates in isolation may be insufficient to evaluate the success, or the factors which contribute to sustainable RTW. Thus, a single snap shot of RTW may not take into account the initial recovery related issues that trauma patients face or address job sustainability.

A recent study in NZ looked at employment, among other outcomes, in 2856 randomly selected claimants of ACC recruited from four regions over a one year period (Derrett et al., 2011). Less than a third of the population, all aged between 18–64 years old with a wide range of acute injuries, had been admitted to hospital for the treatment of their injuries. A separate analysis of the same participant group looking at the results of RTW at three months after injury found that 27% of the predominantly male participants employed before their accident had failed to return to work (Lilley, Davie, Ameratunga, & Derrett, 2012). While participants who had a hospital admission were less likely to be working (perhaps a proxy indicator of injury severity), multivariable logistic regression analysis indicated financial insecurity, low or unknown income, temporary employment, physical work tasks and long week schedules were predictors of non-return to work at three months post injury. These authors expected participants who experienced pre-injury psychosocial and health factors to be less likely to have
returned to work but this was not the case. However, Lilley et al. relied on self-reporting with retrospective baseline data which could have been subject to recall bias. This study included ACC claimants with a wide range of injury types and severities and might not accurately reflect the RTW for the seriously injured group, which ACC reported as 25% (Accident Compensation Corporation, 2012).

3.6.2 Factors influencing return to work in trauma

Although RTW after trauma is recognised as multifactorial, there is little agreement on the individual elements that influence successful RTW. The factors which influence RTW include impairments, and environmental and personal factors. The majority of multi-trauma RTW research consists of prospective cohort studies and, to date, most studies have focused on RTW rates and the identification of factors influencing this. Consequently, many studies have investigated the influence of single or multiple factors on RTW, producing conflicting results (Clay, Newstead, & McClure, 2010; Shaw & Polatajko, 2002). The next section will review some of these factors.

3.6.2.1 Impairment factors – injury severity

The influence of injury severity on RTW following multi-trauma remains inconclusive. While some studies (Clay, Fitzharris, Kerr, McClure, & Watson, 2012; Fort et al., 2011; Tøien, Skogstad, Ekeberg, Myhren, & Schou Bredal, 2011) found a lower ISS predicted RTW in a mixed trauma group, other studies indicate that injury severity had no significant influence on RTW (MacKenzie et al., 2006; Morris et al., 1991; Soberg, Finset, Bautz-Holter, Sandvik, et al., 2007). The ISS is the most commonly used tool to measure injury severity in mixed trauma groups. As mentioned previously, the disadvantage of this measure is that it does not differentiate different types of impairment or indicate the distribution of trauma and, thus, may under represent people with multiple injuries to the same body region. Seekamp et al. (1996) and Grotz et al. (1997) both found RTW related more to the pattern of injury than injury severity. Similarly, Grotz et al. (1997) found the non-working multi-trauma patients were those with cranial, thoracic or pelvic injuries, while the working group were more likely to have injuries to the abdomen or extremities. Holtslag et al. (2007a) found SCI and TBI injuries specifically increased difficulty in RTW, independent of injury severity, although the authors concluded that disability only partially explained the RTW rate.
With uncommon injuries such as bilateral lower limb amputations, which affect only small numbers of people, it is difficult to determine the influence of injury severity as most of the research includes mixed amputee groups. However, Smith et al. (2005) found lower RTW rate in amputees with bilateral, compared to unilateral, lower limb amputations (16%). This makes comparisons to the people with traumatic bilateral AKA from the Christchurch earthquake difficult.

3.6.2.2 Personal factors

Personal factors may be important in determining RTW rates. Although personal factors is the only domain which is not sub-categorised within the ICF, it includes factors which influence how disability is experienced by the individual, such as sex, age, gender, education coping styles, social background, profession, and their past and current experiences of work.

3.6.2.2.1 Age, sex and gender

Age and sex have been investigated as factors that might influence employment following trauma. Overwhelmingly, younger age is positively correlated with RTW after multi-trauma, (Clay, et al., 2012; Clay, Newstead, & McClure, 2010; Holtslag et al., 2007a; MacKenzie et al., 1998; Morris et al., 1991) in lower limb amputation, (Schoppen, Boonstra, Groothoff, van Sonderen, et al., 2001) and SCI (Conroy & McKenna, 1999; DeVivo & Richards, 1992; Krause, J.S., 1992; Ville & Ravaud, 1996). MacKenzie et al. (1998), in a study of individuals with lower extremity fractures, found the younger participants (18-24) were almost three times more likely to RTW than participants aged 45 and over. The decline in RTW associated with older age may reflect an increased difficulty to adapt to their injury or employers may consider they have a limited time frame of employability (Anderson, Dumont, Azzaria, Le Bourdais, & Noreau, 2007). Also, older people may be in a better financial position so may consider retirement to be preferable to seeking alternative employment, or returning to a modified version of their former job. Seekamp et al. (1996) did find older multi-trauma participants were more likely to take retirement than RTW.

Research indicates being male is favourable for RTW after a SCI (Krause, J.S. & Terza, 2006; Tomassen, Post, & van Asbeck, 2000), lower extremity amputation (Burger & Marincek, 2007) or after multi-trauma (Clay, et al. 2012). There are, however, exceptions, Hess, Ripley, McKinley and Tewksbury (2000); and MacKenzie et al.
Valtonen, Karlsson, Alaranta, and Viikari-Juntura (2006) studied a group with traumatic SCI and meningomyelocele in Sweden, and found age was predictor of RTW in men but not in women; with men over 55 less likely to be in work. However, as the majority of people who sustain traumatic injury are male, most study populations are also predominately male. Therefore, women may be under represented in these studies and/or studies underpowered; meaning gender specific factors that influence RTW in women may have been overlooked. Typically, women are more likely to have non-work gender roles that might influence their post injury decisions on RTW, such as child care (Cote & Coutu, 2010; Gjerdingen, McGovern, Bekker, Lundberg, & Willemsen, 2001); and women may be more likely to work part-time (Krause, J.S., Terza, Saunders, et al., 2010b). The job roles of men and women also differ; for example, women are less likely to hold manual labouring jobs (Anderson et al., 2007) that are difficult to return to with functional impairments from a traumatic injury. The true picture of women’s productivity is likely to be better represented in studies that include broader definitions of occupation or productivity roles such as housework. For example, Dimopoulou (2004) found housework and social activities were less affected than employment in multi-trauma survivors.

In summary, personal factors such as age, sex and gender may influence RTW but they are not amenable to change. However, they may be important factors to consider in targeting different vocational interventions for different sub groups.

### 3.6.2.2.2 Education

Higher levels of education at the time of injury are positive predictors of RTW after a SCI (Anderson et al., 2007; Conroy & McKenna, 1999; Hess et al., 2000; Krause, J.S., 1992; Krause, J.S., Sternberg, Maides, & Lottes, 1998; Krause, J.S. & Terza, 2006; Schonherr, Groothoff, Mulder, & Eisma, 2005; Tomassen et al., 2000), lower limb amputations (Schoppen, Boonstra, Groothoff, van Sonderen, et al., 2001) and multi-trauma (Fort et al., 2011; MacKenzie et al., 1998).

However, the implications associated with a higher education may be more relevant for RTW. Hess (2000) suggested increased levels of education may improve RTW by increasing the potential job opportunities available to the injured person and provide opportunities outside manual labouring jobs, which may be unsuitable because of
injury-related impairments. For example, Schoppen, Boonstra, Groothoff, van Sonderen, et al. (2001) found many of the lower limb amputees in their study needed to change to less physically demanding jobs to achieve RTW. MacKenzie et al. (1987) showed higher education levels improved the chance of RTW but economic status was also an important predictor of RTW. In their prospective cohort of 312 individuals with lower extremity injuries, participants with higher pre-injury income were more likely to RTW post injury. They also hypothesised that higher levels of education could influence an individual’s ability to understand the consequences of their injury and, as such, their expectations of recovery or ability to adapt to change.

3.6.2.3 Psychological influences
Different authors suggest various psychosocial factors might influence RTW, such as pain catastrophising, optimistic perspective, locus of control and the will to work (Chan & Man, 2005; Chapin & Kewman, 2001; Murphy, G.C., Young, Brown, & King, 2003; Schonherr, Groothoff, Mulder, Schoppen, & Eisma, 2004). The importance of these psychological factors in RTW has gained recognition in recent times. Fadyl and McPherson (2008) undertook a descriptive review looking at the influence of expectations and injury perception on RTW after injury. The authors defined injury as trauma resulting in functional impairment, and did not limit their review to a particular injury severity. Although they were unable to draw firm conclusions on the influence of injury perceptions on RTW outcome, (largely due to the variability on how ‘expectations’ are defined and measured), they did find evidence that pain catastrophising may negatively influence RTW outcomes. Tøien, Skogstad, et al. (2011) concluded that a low rate of depression predicted RTW at three and twelve months, and an optimistic life orientation, was a predictor of RTW at twelve months in a prospective study of 188 Norwegian trauma patients. An optimistic perspective has also been recognised as important for achieving RTW in two qualitative SCI studies (Chan & Man, 2005; Chapin & Kewman, 2001). Similarly, Schonherr et al. (2004) found positive expectations of RTW were more likely to lead to employment, while Murphy (2003) suggested that locus of control and work attitude were more important than injury level in explaining RTW outcomes in 459 SCI individuals in Australia. In a qualitative study in people with TBI the “will to work” was a key factor influencing RTW in participants, both employed and seeking employment (van Velzen et al., 2011).
Psychosocial factors need to be considered when facilitating RTW in the trauma population. The advantage psychological factors have over demographic factors is that they can be readily measured and may be amenable to change.

3.6.3 Environmental factors
The majority of research on RTW after trauma has investigated the factors which may influence it within the environmental context of a single country, health or compensation system, but has often neglected the influence of the environment itself. Some environmental aspects that have been explored specifically are considered below.

3.6.3.1 Work environment
RTW for people with disabilities from traumatic injury is influenced by the environment in which they wish to work. A review of the long term sickness absence literature indicated that the size and structure of the organisation and the quality of relationships between the employee and employer are important factors for managing long term sickness absence and RTW (Higgins, A., O'Halloran, & Porter, 2012). Often workplace accommodation is required to facilitate RTW following serious injury. Workplace accommodation is: “An adjustment to a job; the work environment or the way things are usually done with the aim of reducing or eliminating workplace barriers to enable a qualified individual with a disability to RTW” (Foreman et al., 2006, p. 23). Accommodation includes adaptations to the work situation, such as modified work hours and duties, either on a temporary or permanent basis, as well as adaptations to the workplace, either physically or through provision of adaptive equipment to enable the person to work. These accommodations may follow legislative guidelines, such as The Americans with Disability Act, which dictates that employers make efforts to provide reasonable workplace accommodations to preserve the ability of those with disabilities to work in the US. However, not all countries have such specific legislation, consequently, not all employers provide equal accommodations. There is no legislative requirement for NZ employers to hold an injured worker’s job open or specific legislation to govern accommodations in the workplace. Employers must follow legislative procedures to terminate injured worker’s contracts.

Adaptation of working hours is often necessary to facilitate RTW after severe injury. Schoppen, Boonstra, Groothoff, de Vries, et al. (2001) investigated the outcome of amputees in the Netherlands aged between 18 - 60 (mean age 44.5) with a lower limb
amputation at least two years prior to the study (mean 19.6 years). Of the participants who had returned to work, 64% had resumed full time work while 36% returned in a part-time capacity. Nearly half the participants required modifications to enable a RTW (43%), including, changes in work hours, work tasks, work load and environmental modifications (Schoppen, Boonstra, Groothoff, van Sonderen, et al., 2001b). These actual adaptations to work hours are not always explored or discussed in the literature as many studies report a single RTW rate that often groups both part and full time employment together (Anke et al., 1997; Frutiger et al., 1991; O'Donnell et al., 2005; Redmill et al., 2006). This may give a false impression of the work capacity of these trauma groups, portraying a higher RTW rate than actually occurs.

A systematic review of the qualitative literature on RTW after injury by MacEachen, Clarke, Franche and Irvin (2006) identified good will and trust as the overarching factors central to successful RTW. The review focused on the qualitative literature of musculoskeletal and pain related injuries and, as such, included a variety of injury severities. They showed RTW involved the interaction of numerous individuals and groups. In addition, they emphasised the challenge of communication and coordination that existed in the RTW process. They highlighted a gap in the qualitative literature, with a lack of studies which followed the course of the RTW process over an extended period. They felt such a study would enhance the understanding of the evolution of the RTW process over time as well as improve knowledge about the sustainability of employment after injury.

It is difficult for an employer to make adaptations in the workplace if they are unaware of a person’s disability (or preserved abilities) but, for many reasons, disclosure of disability status to an employer is a contentious issue. There are differences between the self-disclosure of a visible disability versus the acknowledgment of a hidden disability, the differences between a physical and a cognitive impairment, or a visible physical impairment, such as amputation, versus an invisible physical impairment, such as bladder and bowel dysfunction. Gold, Oire, Fabian and Wewiorski (2012) used a grounded theory method to investigate workplace accommodation negotiations from the perspective of the employee, the employer and rehabilitation service providers. They identified a divergence between the perspectives of those different groups and highlighted the problems of negotiating successful workplace accommodation. They
recommended educational interventions around the key issues of credibility, trust and obligations to enhance RTW.

Another influential issue in the workplace, which has received less coverage in the literature, is the attitudes of co-workers. A descriptive article by Colella (2001) described the possible implications of negative attitudes from co-workers about accommodations made for disabled staff in the workplace. However, much of this research is based on responses to hypothetical situations or on the attitudes and knowledge of the employer and, therefore, may not reflect the actual situation faced by individuals with disabling injuries in the workplace. RTW is considered easier if people return to their previous employment or use friends and family as contacts to find work (Chan & Man, 2005).

Current research is often single health system or legislative system based, so captures the environmental issues specific to that system. Differences in employment rates across countries may be more indicative of different compensation systems (environmental factors), rather than specific injury impairment or personal factors. Compensation itself has been shown to have a negative effect on RTW (MacKenzie et al., 1998; Zelle et al., 2005), and people waiting for litigation are less likely to RTW (Fort et al., 2011). Much of the employment literature is based within litigation and insurance systems that are very different from the NZ environment; thus, making it difficult to compare to a NZ context. This section highlights the impact of the work environment and other environmental factors on RTW after injury. Adaptations to the work environment may be necessary for people with residual impairments from injury to allow RTW. The influence that environmental factors have on RTW could be more easily identified if there were more research that included participants from different countries and, therefore, different funding systems.

3.6.3.2 Social support
Support is part of the interpersonal context (or environment) and is also relevant for RTW. Support can take a number of different forms, such as emotional, esteem, informational or tangible support. RTW support can come from a variety of sources, including family, friends, whanau, health and vocational professionals, as well as people within the workplace. Having a positive social network can improve the chance of RTW. MacKenzie et al. (1987) found the odds of working full time at 12 months
post injury doubled in the presence of a strong social network, which they described as the presence of one or more confidants. A confidant was someone who was easy to contact and initiated contact a couple of times a month and with whom the person could discuss personal or serious problems with, and this would be reciprocated. The study comprised 266 individuals with trauma in the US, who were employed at the time of their accident. The positive effect of social support was more distinct in individuals with lower incomes; they suggested the early inclusion of a person’s social network after traumatic injury. A phenomenological study of individuals with SCI and vocational rehabilitation professionals in NZ also identified that social networks were an important influence on RTW (Hay-Smith et al., 2013). Similarly, a prospective cohort study in Australia found participants who reported strong social relationships, (measured through the Assessment of Quality of Life status instrument), high social functioning, (measured by SF-36 social functioning domain) and who were entitled to injury compensation, returned to work earlier (Clay et al., 2012; Clay, Newstead, Watson, Ozanne-Smith, & McClure, 2010). Unfortunately, they did not include a focus on social support provided by the social networks.

3.7 Summary

In this chapter it has been established that traumatic injury has long term consequences from the individual to societal level. There are wide ranging functional limitations and decreased QoL evident for many years after traumatic injury. RTW following trauma is multifactorial, with a complex interplay of physical, personal and environmental influences. The interactions of these multiple factors are not yet fully understood and several confounding influences, such as, the definitions used, the measurement and timing of RTW, as well as the multiple variables across all ICF domains, mean interpretation of the data is difficult. RTW may be influenced by the demographic characteristics of the injured person, with younger males showing improved RTW rates; however, such factors are not amenable to change. Psychological factors such as pain catastrophising, an optimistic perspective, locus of control and the will to work may be a more relevant focus for vocational intervention, as these may be more amenable to change. Consideration of environmental factors is vital for successful RTW, and legislative and social changes may be necessary to improve RTW after injury. Support may improve outcomes but further work is required to determine the best type of support to facilitate RTW.
The next chapter will present the causes and patterns of earthquake trauma and describe what is known about the differences in injury outcomes between earthquake trauma and other trauma. In order to contextualise the empirical research undertaken, a descriptive review is augmented by a systematic review on the participation and QoL outcomes after earthquake injury will be presented, before locating this thesis in relation to the literature.
4 Literature review concerning earthquake trauma

This chapter focuses on earthquake trauma. First, the differences in the causes and consequences of earthquake trauma will be identified, highlighting the similarities and differences to trauma. Second, the methods and results of a systematic review of the literature on RTW and QoL following physical injury as a result of an earthquake will be presented before considering this literature in the context of the thesis objectives.

4.1 Causes and patterns of earthquake trauma

Epidemiological investigation in earthquake trauma is quite different from that of other trauma. Data collection after an earthquake is often complicated by the large numbers of casualties and high demand placed on medical facilities, or temporary medical centres; as a result, earthquake trauma research is predominantly anecdotal or based on small case series and often only represents the individuals who present for medical assistance. Comparison of data across earthquakes is difficult as each earthquake has unique characteristics, including differences in the magnitude, location, the time of day the earthquake occurs and its proximity to urban environments (section 1.2.1). Falling masonry or building collapse is the greatest cause of injury and death in an earthquake irrespective of the country (Briggs, 2006; Naghii, 2005; Papadopoulos et al., 2004; Peek-Asa et al., 1998). The building codes and government regulations which determine the structural integrity of buildings differ between countries. During an earthquake, building integrity may dictate the safest course of action for people to take in order to avoid injury; and survival rates in different earthquakes have both increased and decreased by running from buildings. In the 1988 Armenian earthquake (Armenian, Hoji, & Oganesian, 1992) and the 1992 Turkish earthquake (Angus et al., 1997), survival rates were improved by fleeing the buildings. Although Turkey had building codes designed to withstand earthquakes these were not consistently implemented and, in the Eastern Marmara earthquake, 73,342 buildings collapsed or were badly damaged (Akinci, 2004) causing significant loss of life. In contrast, during the Northbridge earthquake in California where higher building codes existed, exiting the building doubled the chance of injury (Ramirez & Peek-Asa, 2005). In Christchurch few buildings suffered complete collapse. The Canterbury Television Building (commonly reported as the CTV Building) collapsed causing the majority of deaths (n=115) in the
Christchurch earthquake. An investigation into the collapse of the building found that deficiencies in the engineering design, poor adherence to building codes and inadequacies in the building’s construction contributed to the collapse (Canterbury Earthquakes Royal Commission, 2012).

Entrapment is a significant prognostic indicator for earthquake injury, with increased injury rates in entrapped victims (Briggs, 2006; Naghi, 2005). The length of entrapment determines the chances of successful rescue of survivors, which drop dramatically 24 hours after an earthquake (Noji, 1991). This was indeed the case in the Christchurch earthquake, where approximately 70 people survived after they were trapped in collapsed buildings, with the last survivor rescued just over 24 hours after the earthquake (Dolan, Esson, Grainger, Richardson, & Ardagh, 2011). These survivors had the most significant injuries and the consequences of crush injuries contributed to the complexity of their condition. Notably, there were more deaths than survivors in the case of entrapment, for example, with reference to the CTV building.

The most common earthquake injuries are musculoskeletal (Bartels & VanRooyen, 2011; Johnson et al., 2014) with a high incidence of crush injuries (13-20%) (Bartels & VanRooyen, 2011; Kurt, Küçük, Demirhan, & Altaca, 2003). Mulvey et al. (2008) found a low incidence of crush injuries in survivors of the Kashmir earthquake, but postulated that the individuals who sustained crush injuries did not live long enough to reach the hospital. One common sequelae of crush injuries is amputation (Chen, T.W. et al., 2011; Dhar et al., 2007; Mallick, Aurakzai, Bile, & Ahmen, 2010; Yang et al., 2009); after an earthquake, amputations in the field are often necessary to enable rescue. This sequence of events was witnessed in the Christchurch earthquake (Dolan, 2011).

SCI is the most common neurological earthquake-related injury; specifically, thoracolumbar injuries (Dong et al., 2010; Karamouzian et al., 2010; Li et al., 2012; Rathore et al., 2007). Cervical SCI with AIS A (motor and sensory complete) injuries are uncommon after earthquakes, probably due to the impact of the injury, the method of rescue, or because of delayed medical response, resulting in people with such injuries dying. The Kashmir Pakistan earthquake resulted in between 650-750 people sustaining a SCI; the majority of whom were women (Rathore, Farooq, Muzammil, et al., 2008). In contrast, non-earthquake SCI is seen predominantly in males (Wyndaele
& Wyndaele, 2006), with injuries to the cervical spine the most common (Ho et al., 2007). Most earthquake SCI are the result of crush injuries, either from entrapment or being hit by falling objects (Dong et al., 2010; Rathore et al., 2007), while non-earthquake SCI are predominantly caused by motor vehicle accidents (Wyndaele & Wyndaele, 2006).

In the emergency situation medical services are stretched, and medical notes are not always accurately written or filed. A retrospective review of the earthquake SCI from the Bam earthquake in Iran (Karamouzian et al., 2010) appeared to indicate significant improvements in the AIS (Maynard et al., 1997). At injury, 68.9% of patients were classified AIS A but only 26.2% were still AIS A 18 months later. Such results are surprising and in contrast with expected recovery rates for non-earthquake SCI. This is illustrated by a US study where Kirshblum et al. (2004) compared AIS scores at one year and five years post injury and showed 94.4% of patients with complete SCI (AIS A) made no improvement, 5.6% improved to incomplete status, but only 1.05% improved to each of ASIA C and ASIA D grades (i.e. became motor incomplete). The improvement differences between the two types of SCI must, therefore, be interpreted with caution. Rathore, Farooq, Muzammil, et al. (2008) highlighted inaccuracies of AIS scores in earthquake SCI from the earthquake in Pakistan, where inexperienced medical staff did not complete the sacral testing accurately; thereby grading patients as AIS A (complete injuries) when they should have been AIS B and C (incomplete injuries).

Two age groups have the highest risk of earthquake injury, children and the elderly. In the Sichuan earthquake two age peaks in the hospital admissions were observed, 10-14 year-olds and the over 75s. In contrast in Christchurch, middle aged people had a relatively higher risk of injury (Johnson et al., 2014), the mean age of those injured was 56 years, (Ardagh et al., 2012) with 20% of the injured over 65 years-old (Johnson et al., 2014). Mortality rates increase with age (Spence, So, & Scawthorn, 2011), and increased frailty and reduced mobility contribute to this. Other risk factors for injury are poor mobility and pre-existing illness or disease (Briggs, 2006; Naghii, 2005 ).

Injuries in the female population are more prevalent following earthquake trauma than in other trauma (Karamouzian et al., 2010; Mallick et al., 2010; Naghi et al., 2005; Raissi, Mokhtari, & Mansouri, 2007;; Rathore, Farooq, Muzammil, et al., 2008; Yang et al., 2009; Zhang, L., Li, Carlton, & Ursano, 2009). In Christchurch, 69% of people
injured in the earthquake were women (Ardagh et al., 2012; Johnson et al., 2014). There are various theories to explain the high incidence of injuries in women. The time of day and location of the earthquake may influence the number of women injured. One theory is that women are more likely to occupy caring roles and are more likely left to assist children and elderly relatives who are most at risk of injury. If the earthquake occurs during the day, child care roles may mean they are more likely to be at home and, therefore, be in a building as it collapses. In Christchurch, the majority of serious injuries were in the city centre and so women may have been in the city centre shopping, or working in office roles in buildings that were destroyed.

A total of 182 patients were admitted to Christchurch hospital with earthquake injuries in the first 72 hours after the Christchurch earthquake; most had orthopaedic injuries (Table 4.1) (Ardagh et al., 2012). There were over 7,000 injury claims made to ACC, but only eight claims were classified as severe injuries by ACC. The serious injury category includes: earthquake SCI A-D, TBI (serious and some moderate) and equivalent diagnostic groups, including double amputees who will require lifelong support from ACC. NZ has no trauma registry to compare this population to. However, an audit of trauma admissions to the Christchurch Hospital Orthopaedic Trauma Unit between 2007-2009 showed an average yearly admission of 44 seriously injured patients (Injury Severity Score of > 16) (Nunnerley, Sinnott, Hooper, Singhal, & Vincent, 2011), illustrating a very high number of admissions occurred at a single point that the hospital and its staff had to deal with.

**Table 4.1 Christchurch earthquake orthopaedic injury data**

<table>
<thead>
<tr>
<th>Injury</th>
<th>Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-trauma patients</td>
<td>27</td>
</tr>
<tr>
<td>Upper limb injuries</td>
<td>33</td>
</tr>
<tr>
<td>Lower limb injuries</td>
<td>92</td>
</tr>
<tr>
<td>Crush injuries</td>
<td>38</td>
</tr>
<tr>
<td>Neck of femur fractures</td>
<td>30</td>
</tr>
<tr>
<td>Pelvis fractures</td>
<td>10</td>
</tr>
<tr>
<td>Spinal fractures</td>
<td>19</td>
</tr>
<tr>
<td>Lower limb amputations</td>
<td>7 (4 people)</td>
</tr>
<tr>
<td>Bilateral lower limb amputations</td>
<td>3</td>
</tr>
</tbody>
</table>

(Adapted from Ardagh et al., 2012 p5 and Christchurch Hospital Orthopaedic Department data)
In summary, earthquake trauma survivors have different injury presentations from other traumatic injury; for example, double below knee amputations instead of single amputations, thoracic SCI instead of cervical SCI. Earthquake trauma is more common in women, children, and the elderly, rather than in young males, the main population group seen in traumatic injury.

4.2 Outcomes of earthquake trauma

There are very few papers documenting outcomes following earthquake trauma. The unpredictable nature of earthquakes means that the planning of post-earthquake research is usually time limited, with participant selection confined to subgroups from individual hospitals or regions. The issue with studies of small numbers of participants or with participants from just one centre is that they may not represent the population injured in the earthquake as a whole. Consequently, the results of these studies need to be interpreted with care. One example is a study by Zhang, J.L., He, Lin, Luo, and He (2011) which showed major motor and functional loss in 36 patients treated in the intensive care unit in one hospital after the Wenchuan earthquake. This represented only a very small proportion of the total 374,176 people who were reported as wounded in the earthquake. In addition, a number of the measures used were inappropriate for use on comatose patients in intensive care, (such as balance measures with a clear floor effect in this population); this limited the accuracy of motor and functional loss statements.

A review of literature examining the dissemination of information after the Wenchuan earthquake found most earthquake research focused on medical management and the emergency response (Li et al., 2009). Few researchers have looked at outcomes of people with fractures caused in an earthquake; for example, Zhang, He, Lin, Luo, Xia, et al., (2011) conducted a retrospective study of patients with fractures admitted to a single hospital after the Wenchuan earthquake. On admission, perhaps unsurprisingly, 82% of participants demonstrated a decreased range of movement and 23.5% reduced muscle force. Although the bone healing rate was similar across both sexes, activities of daily living capacity at three months improved only in the female participants. The authors postulated this could be evidence of the women’s stronger personalities in the face of disaster, or an effect from the Chinese culture, although they do not elaborate on this. Xiao, Li, Zhang, and Zhao (2011) found rehabilitation was positively associated
with improved functional recovery in Wenchuan earthquake survivors with a tibial shaft fracture, while prolonged immobilisation, age and depressive symptoms were more likely to lead to negative outcomes at 15 months. Roy, Shah, Patel, and Bagalkote (2005) identified that injured earthquake survivors who lived in rural areas had less favourable outcomes in the 2001 Gujarat earthquake. At two years after injury Roy identified missed injuries in 10% of the 133 participants followed up, and 12% of them had restricted range of movement. There were no functional measures taken. The authors felt inappropriate and badly timed operations influenced by short time commitments from overseas medical staff and poor follow up may account for the morbidity issues.

In summary, the impact of earthquake trauma, when compared with other trauma on recovery is poorly understood, with most of the seismic research focused on mortality and immediate surgical outcomes rather than long term outcomes.

4.2.1 Rehabilitation differences

To date, most major earthquakes have occurred in the developing world and health care provisions in these countries differ from those available in the developed world. Many of the studies on earthquake trauma in the developing world identified issues relating to the health systems of the countries and their ability to deal with mass casualties. The Pakistan earthquake of 2005 produced hundreds of patients with SCI, the highest recorded in a natural disaster (Burns, A.S., O'Connell, & Rathore, 2012). At the time of the earthquake there was only one specialist SCI rehabilitation centre in that country (Rathore, Farooq, Muzammil, et al., 2008). Some of the patients with SCI were not able to be discharged home because they had inappropriate facilities at home and remained in hospital care or were reluctant to leave for fear of losing their payments from disaster relief funds. Many patients who did return to the community were readmitted to the rehabilitation centre with pressure area infections over the subsequent month, which stemmed from the lack of specialist knowledge (Rathore, Farooq, Butt, & Gill, 2008). Raissi et al. (2007) found pain, pressure areas and bowel problems, were common in patients with SCI sustained in the Bam earthquake. Similarly, a study of 26 individuals with SCI injured in the Sichuan earthquake showed half the participants had suffered urinary complications and almost the same number had new pressure areas within 12 months of injury (Hu et al., 2012). Differences in economic and social standards between developing and developed countries means comparison of outcomes after
earthquakes from developing countries with the Christchurch earthquake is nearly impossible, even before the differences in the magnitude of the earthquake are considered, and this highlights the importance of researching outcomes after injury from earthquakes in the developed world.

4.2.2 Psychological effects of earthquake trauma
The reported incidence of PTSD following exposure to an earthquake ranges between 3-3% to 81% (Bartels & VanRooyen, 2011), much higher than PTSD rates after trauma (10-20%) (Section 3.4.1). The variability in PTSD rates reported after earthquakes reflects differences in the time between the earthquake and measurement, different exposure levels to the earthquake and differences in the population groups, including cultural differences. PTSD appears more prevalent in people who were closer to the earthquake epicentre and people who had a higher exposure to trauma, such as the loss of loved ones, those who assisted in the rescue process, had injuries or were trapped during the earthquake (Başoğlu, Şalcioğlu, & Livanou, 2002). Females exhibited more severe PTSD symptoms (Başoğlu, Kiliç, Şalcioğlu, & Livanou, 2004; Başoğlu et al., 2002; Chen, T.W. et al., 2011; Kuo et al., 2007; Lai, Chang, Connor, Lee, & Davidson, 2004; Naeem et al., 2011; Predescu & Nica-Udangiu, 1979). Başoğlu et al. (2002) investigated PTSD in 1,000 people living in three camps and two prefabricated housing sites in the epicentre region of the Turkey earthquake and found avoidance of trauma reminders (such as places, people, activities or situations) was the most common symptom of PTSD. Naeem et al. (2011) found a positive relationship between earthquake exposure and the level of PTSD 18 months after the Bam earthquake. PTSD symptoms are also perpetuated by post trauma factors such as temporary accommodation and damage to housing, and secondary factors, such as, loss of social networks and unemployment (Oyama, Nakamura, Suda, & Someya, 2011). Although PTSD typically starts one month after a disaster (Kuo et al., 2007) it may last for a substantial length of time. Rob Gordon (Gordon, 2013) described the length of PTSD following natural disasters to be as long as five years based on his personal experience as clinical psychologist who has worked in the disaster field since 1983; he has indicated PTSD could result from direct exposure to trauma but also indirect trauma through second hand information as people lived through the experience as it was relayed by others (Gordon 2013). The likelihood of people experiencing PTSD was identified early after the Christchurch earthquake (Sullivan & Wong, 2011). However,
as yet, little published information is available on the post-earthquake PTSD symptoms in Christchurch.

This section described the differences between trauma and earthquake trauma. The next section presents the results of a systematic review on the QoL and participation outcomes after a physical earthquake injury.

4.3 Systematic review

The previous section of this chapter reviewed the literature on the epidemiology and outcomes following earthquake injury. This section presents the methods, findings and conclusions of a systematic review on the participation and QoL outcomes of adults following physical disability as a result of an earthquake. At the time of the research, no systematic reviews addressing the long term outcomes following injury as a result of an earthquake had been published. A systematic review methodology was used instead of a subjective literature review as RTW and QOL are concepts that are difficult to define and measure. A systematic review was the best way to capture the maximum literature in the area and identify and critically appraise the available evidence.

4.3.1 Method

This review was based on the guidelines from NHS Centre for Reviews and Dissemination (Centre for Reviews and Dissemination, 2009) as it was not aligned with a Cochrane review methodology for randomised controlled trials (Higgins, J.P.T. & Green, 2011). A review protocol was developed and the search strategy created in consultation with an experienced health librarian.

4.3.1.1 Search strategy

A computerised literature search was conducted in Ovid on Medline, Embase, PsycINFO, CINAHL and AMED databases. All databases were searched from their inception to January 2014. The search strategy included subject headings addressing work or employment; participation and trauma; injury; and earthquakes, seismic events or natural disasters. The full search strategy was adapted to suit the needs of each database searched (an example of one of the search strategies in included in Appendix A). All research designs were included in the study. The search was limited to studies involving adult participants, and restricted to English language. A citation search of the key studies was also undertaken.
For inclusion into the review three criteria were required: (1) the study had to include participants with physical disability, which was defined as orthopaedic or neurological impairment, such as SCI or TBI. Therefore, the review did not include psychological disorders as a primary diagnosis. In instances where studies included participant groups with both injured and non-injured earthquake survivors, at least 75% of the participants had physical injuries to ensure the studies were representative of the earthquake survivors with a physical injury. Although this was an arbitrary figure it was chosen to ensure the majority of participants in each study had a physical impairment to allow comparison to the PhD study; (2) The injuries were sustained in an earthquake or related consequences of an earthquake within 48 hours of a major earthquake, defined as being a magnitude 5 or above. A magnitude 5 on the Richter scale was selected as this magnitude of earthquake can cause damage to poorly constructed buildings; (3) The outcomes of the study were QoL, or participation. QoL was defined as “an individual’s perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” The World Health Organisation Quality of Life Group (The WHOQOL Group, 1998, p. 551). Participation outcomes were defined using the International Classification of Functioning, Disability and Health (ICF) (World Health Organisation, 2001), which includes RTW. The search terminology was determined by the descriptive review of RTW in Section 3.5).

The titles and abstracts of all search results were screened against the inclusion criteria for possible inclusion into the review. Where insufficient information was available the full journal article was reviewed. To check for reliability two additional researchers independently reviewed 10% of the search results. Differences were resolved by discussion between the three review authors. A consensus panel made up of the supervisors was available if agreement was not possible, but this was not required.

### 4.3.1.2 Screening methodological quality

As there is no universally agreed critical appraisal tool applicable to all study design (Katrak, Bialocerkowski, Massy-Westropp, Kumar, & Grimmer, 2004), this review used the Critical Appraisal Skills Programme (CASP) Guidelines, from the NHS (Public Health Resource Unit, 2012). The CASP guidelines were chosen as they can be used to assess quality and clinical relevance with specific tools for a wide range of
study designs. Studies were excluded if they scored ‘no’ to more than 50% of the CASP guidelines questions, including one of the screening questions.

4.3.2 Results

The initial search of the databases identified 961 potentially relevant articles once the duplicates were removed (Figure 4.1). A further 920 articles did not meet the selection criteria and were excluded from the abstract review. Forty-one full text articles were retrieved for further review; 32 failed to meet the inclusion criteria as they did not relate to earthquakes, the participants included children, they did not have physical injuries or did not measure QoL or participation outcomes. Nine articles met the criteria for inclusion into the review (Delauche et al., 2013; Hu et al., 2012; Irshad, Mumtaz, & Levay, 2012; Luo et al., 2012; Rauch, Baumberger, Moise, von, & Reinhardt, 2011; Roy, Shah, Patel, & Bagalkote, 2005; Sudaryo et al., 2012; Tasiemski, Nielsen, & Wilski, 2010; Wen et al., 2013; Zhang et al., 2012).

Two researchers independently assessed the methodological quality of all the studies included. Studies with significant design issues that lacked appropriate quality, as assessed with the CASP, and by consensus between the two reviewers, were not included in the review, but presented as marginal studies. Two studies were excluded on the basis of quality (Luo et al., 2012; Wen et al., 2013).

Table 4.2 presents the summary information of the included studies which represented populations from five earthquakes.

- The 2008 Whenchuan earthquake in China, also known as the Sichuan earthquake (Hu et al., 2012; Tasiemski, Nielsen, & Wilski, 2010; Zhang, X. et al., 2012),
- The 2009 Padang earthquake in Indonesia (Sudaryo et al., 2012)
- The 2005 Kashmir earthquake in Pakistan (Irshad, Mumtaz, & Levay, 2012),
- The 2001 Gujarat earthquake, India (Roy et al., 2005), and
- The 2010 Port-au-Prince earthquake in Haiti (Delauche et al., 2013).
Figure 4.1 Flow chart of systematic review
Participants represented in the studies were quite variable: three reported outcomes of SCI participants (Hu et al., 2012; Irshad et al., 2012; Tasiemski et al., 2010), one reported outcomes of participants with fractures (Zhang, X. et al., 2012), one included limb trauma and amputees (Delauche et al., 2013) and two included participants with mixed injuries, including fractures, amputations and paralysis (Roy et al., 2005; Sudaryo et al., 2012).

Many studies reported additional outcomes which fell beyond the scope of the review; therefore, only QoL and participation measures will be presented here. One study reported on QoL outcomes (Sudaryo et al., 2012), two reported participation outcomes (Irshad et al., 2012; Roy et al., 2005) while four studies reported both (Delauche et al., 2013; Hu et al., 2012; Tasiemski et al., 2010; Zhang, X. et al., 2012). Participation and QoL outcomes will be covered separately below.
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Earthquake</th>
<th>Participants</th>
<th>Aim of Study</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
<th>Follow-up</th>
<th>Study design</th>
<th>Main outcomes</th>
<th>Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tasiemski et al. (2010)</td>
<td>China</td>
<td>2008 Whenchuan Earthquake, Sichuan Province, China</td>
<td>14</td>
<td>Assess QoL and identify most important areas of rehabilitation</td>
<td>Wheelchair dependent SCI earthquake survivors</td>
<td>Not stated</td>
<td>1.5 years post injury</td>
<td>Prospective cohort</td>
<td>QoL low</td>
<td>Small sample size, inappropriate outcome measures, non-validated rehabilitation measure, incomplete questionnaires</td>
</tr>
<tr>
<td>Hu et al. (2012)</td>
<td>China</td>
<td>2008 Whenchuan Earthquake, Sichuan Province, China</td>
<td>26</td>
<td>To compare functional status, quality of life and community integration at discharge at and one year community follow up</td>
<td>SCI earthquake survivors</td>
<td>SCI with TBI and/or fractures of the extremities</td>
<td>1 year post injury</td>
<td>Prospective cohort</td>
<td>All QoL and activities of daily life assessments improved at 1 year, social integration and occupation least improvement</td>
<td>Small sample size, no information on inpatient services</td>
</tr>
<tr>
<td>Zhang, X. et al. (2012)</td>
<td>China</td>
<td>2008 Whenchuan Earthquake, Sichuan Province, China</td>
<td>390</td>
<td>To evaluate functional outcomes, health-related quality of life and life satisfaction after 27 months</td>
<td>Earthquake fracture victims, over 18 years</td>
<td>Not stated</td>
<td>2.25 years post injury</td>
<td>Cross-sectional quasi-experimental design</td>
<td>Health-related quality of life was higher in subjects who had early rehabilitation</td>
<td>No classification of fracture type, or severity, no details of the rehabilitation received or why participants received early, late or no rehabilitation</td>
</tr>
<tr>
<td>Roy et al. (2005)</td>
<td>India</td>
<td>2001 Gujarat earthquake, India</td>
<td>133</td>
<td>To analyse surgical outcome and physical/psychosocial status at two years</td>
<td>Non-urban earthquake survivors</td>
<td>Not stated</td>
<td>2 years post injury</td>
<td>Retrospective review</td>
<td>Fifty-one percent of participants were employed, but only 30% had recovered economically.</td>
<td>Unclear on identification of participants, subjective inferences made but unsupported by the results</td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Earthquake</td>
<td>Participants</td>
<td>Aim of Study</td>
<td>Inclusion Criteria</td>
<td>Exclusion Criteria</td>
<td>Follow-up</td>
<td>Study design</td>
<td>Main outcomes</td>
<td>Quality</td>
</tr>
<tr>
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<td>---------</td>
</tr>
<tr>
<td>Sudaryo et al. (2012)</td>
<td>West Sumatra Province, Indonesia</td>
<td>2009 Pedang earthquake, Indonesia</td>
<td>184 injured 84 control group</td>
<td>To investigate the associations between injury, disability and quality of life</td>
<td>Over 18 and/or married with injury from earthquake, Permanent resident of Pandang with control group</td>
<td>Not stated</td>
<td>3 months and 6 months starting 4 months from earthquake</td>
<td>Prospective cohort</td>
<td>Individuals with injury from an earthquake have higher levels of disability and lower QoL compared to non-injured</td>
<td>Control group had very different demographics</td>
</tr>
<tr>
<td>Delauche et al. (2013)</td>
<td>Haiti</td>
<td>2010 Port-au-Prince earthquake Haiti</td>
<td>305 participants</td>
<td>To assess the functional and socio-economic status at one and two years</td>
<td>Living in Port-au-Prince with lower limb surgery resulting in amputation or limb preservation</td>
<td>Not stated</td>
<td>1 and 2 years post injury</td>
<td>Prospective cohort</td>
<td>QoL impacted in all SF-36 domains improved over time but mental health remained lower in amputees</td>
<td>Bias in participant sample. Multiple outcome measure, poor comparison group for QoL</td>
</tr>
<tr>
<td>Irshad et al. (2012)</td>
<td>Pakistan</td>
<td>2005 Kasmir earthquake, Pakistan</td>
<td>73</td>
<td>To explore the long-term, gendered consequences</td>
<td>Over 16 with permanent paraplegia as a result of the earthquake</td>
<td>Mental disorders</td>
<td>3 years post-earthquake</td>
<td>Qualitative</td>
<td>Paraplegic women are socially, economically and financially disadvantaged</td>
<td></td>
</tr>
</tbody>
</table>
4.3.3 Quality of life following earthquake injury

Quality of life was addressed in five studies, but inconsistent time points and measurement tools were used, which made comparisons between the studies difficult. As Table 4.3 shows, there was little consistency in the QoL measures reported across the studies.

Table 4.3 QoL outcomes used in the studies

<table>
<thead>
<tr>
<th>Author</th>
<th>Measures used</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHOQOL-BREF (The WHOQOL Group, 1998)</td>
<td>✔</td>
<td>Housing, distance to the rehabilitation centre educational level, income</td>
</tr>
<tr>
<td>The Lisat-9 (Fugl-Meyer, Brännholm, &amp; Fugl-Meyer, 1991)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>SF-36 (Ware &amp; Sherbourne, 1992)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Indonesia Health Related Quality of Life Questionnaire (Rivany, 2014)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Tasiemski et al. (2010)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Hu et al. (2012)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Sudaryo et al. (2012)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Zhang, X. et al. (2012)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Delauche et al. (2013)</td>
<td>✔</td>
<td>✔ Living in a tent, getting enough food</td>
</tr>
</tbody>
</table>

Hu et al. (2012) used the WHOQOL-Bref, a 26-item scale measuring QoL domains of physical, psychological, social relationships and the environment devised by WHO (The WHOQOL Group, 1998). Tasiemski et al. (2010); and Zhang, X. et al. (2012) used the Lisat-9 which measures subjective QoL across a number of domains, including leisure, vocational situation and family life (Fugl-Meyer et al., 1991). Participants in the study by Tasiemski et al. (2010) indicated their life was between “rather satisfying” and “rather dissatisfying,” with vocational and sexual life receiving the lowest scores and partnership relationships the highest. Zhang, X. et al. (2012) showed Lisat-9 scores to be significantly higher in participants who had received rehabilitation. In addition to
the Lisat-9, Zhang, X. et al. (2012) also measured health related QoL using the SF-36. They retrospectively grouped participants into an early intervention group, (rehabilitated at county MZ in September 2008), a late intervention group (rehabilitated at county AX one year later, September 2009) or a control group (who had received no institutional based rehabilitation). The two groups who received rehabilitation had statistically significant better QoL scores than the controls but no differences were seen because of the timing of rehabilitation. Delauche et al. (2013) also used the SF-36 and showed improved QoL between the first and second years although the amputees scored lower on the mental health scores than the participants with preserved lower limbs. They also compared the SF-36 scores from their participants to Swedish participants with ACL repairs and found the earthquake survivors had lower QoL than the individuals in Sweden who had ACL repairs.

Delauche et al. (2013) and Tasiemski et al. (2010) also used additional non-standardised descriptors of QoL. Tasiemski et al. (2010) reported on employment level (reported in Section 4.6.2), education level and a rate of housing adaptations (21%), and an average travel time to a rehabilitation centre (one hour) Delauche et al. (2013) reported the population numbers living in tents without adequate food, which they considered a QoL outcome. Although these factors were considered by the authors as QoL measures, conceptually they cannot be considered adequate indicators of QoL although they may contribute to an individual’s QoL.

Sudaryo et al. (2012) used a modified version of the Indonesia Health Related Quality of Life Questionnaire developed by one of the authors. When compared to a non-injured control group, the injured survivors of the Pedang earthquake showed consistently lower QoL scores at baseline, three months and six months.

Generally, there were improvements in QoL after discharge from the hospital, QoL was better in people who had received rehabilitation but remained lower, overall, than the non-injured population.

4.3.4 Participation outcomes following earthquake injury

Participation outcomes were described in six studies (Delauche et al., 2013; Hu et al., 2012; Irshad et al., 2012; Roy et al., 2005; Tasiemski et al., 2010; Zhang, X. et al., 2012). RTW was the most common participation outcome evaluated. As Figure 4.2 shows, the RTW rate varied across the studies. Hu et al. (2012) reported the lowest
RTW rate of 15.4% of participants (four people) whereas the highest rate was reported at 51% (Roy et al., 2005); however, no specific definitions of RTW were provided in either study. Only Zhang, X. et al. (2012) attempted further analysis of RTW and reported statistically significant higher life satisfaction in subjects who had completed rehabilitation therapy, were in paid employment, or were female. The lowest RTW rates were reported in SCI (Hu et al., 2012; Tasiemski et al., 2010) with the highest rates in mixed injury groups (Roy et al., 2005). The differences in injury type, and lack of any severity rating in the mixed injury and fracture groups made comparisons difficult.

Figure 4.2 Reported return to work rates

Hu et al. (2012) were the only authors to use a specific participation measure: The Craig Handicap Assessment and Reporting Technique (CHART) (Hall, Dijkers, Whiteneck, Brooks, & Krause, 1998). This is based on the WHO International Classification of Impairments, Disability and Handicap (ICIDH) (World Health Organisation, 1980) which includes questions on self-care, transportation, how people
spend their time and who they spend their time with. They found modest but non-significant improvements in the overall CHART score between hospital discharge and one year follow up in the community; only the physical independence and mobility domains increased significantly.

Irshad et al. (2012) used an ethnographic method to explore gender differences among rural paraplegic survivors of the Pakistan earthquake in the only qualitative study in the review. They found divergent experiences between males and females with paraplegia. Male paraplegics were supported by their wives and families while female paraplegics faced abandonment from their husbands and many of the women remained institutionalised. For the female paraplegics this denied them traditional homemaker roles. In addition, many of these women faced financial hardship because their husbands intercepted their stipends to use on their new families, and they were unable to support themselves through paid employment because this was considered culturally inappropriate.

The results of these studies indicate that QoL is disrupted for injured earthquake survivors. QoL improves between the time of discharge from a hospital or rehabilitation facility and a point 12-18 months after injury (Hu et al., 2012; Zhang, X. et al., 2012). RTW rates are low in the earthquake survivors, recorded at between 15.4% (Hu et al., 2012) and 23.2% (Tasiemski et al., 2010) in a SCI population and 51% in a wider injury group (Roy et al., 2005). Paid employment was found to be positively related to life satisfaction (Zhang, X. et al., 2012). However, many of the injured survivors studied had failed to recover economically.

### 4.3.4.1 Other articles of interest from the review

A number of relevant articles were found which did not meet the criteria for the review. Rauch, Baumberger, Moise, von, and Reinhardt (2011) used the Brief ICF core sets tool (Cieza et al., 2010; Kirchberger, Cieza, Biering-Sørensen, et al., 2010) with three additional categories from the comprehensive core set to assess the rehabilitation needs of injured earthquake survivors from the Haiti earthquake with SCI. They found nearly all their participants had limitations in areas of social integration, including employment. Although this identified rehabilitation needs and potential issues for these patients with SCI in the rehabilitation centre in Port-au-Prince they did not investigate the actual situation when they were discharged. Luo et al. (2012) investigated the
bladder management of injured earthquake survivors with SCI from the Whenchuan earthquake. They included participants with AIS E, which meant these participants had no impairments as a result of their SCI. Lou et al. concluded individuals with normal bladder had the best QoL, as measured by the WHOQOL-BREF; but it appeared they failed to consider that the lack of motor or sensory impairments in these AIS E participants may have a bearing on their QoL in addition to having normal bladder function.

Wen et al. (2013) investigated chronic pain in the SCI earthquake survivors from the Whenchuan earthquake. They looked at how QoL correlated with pain but, again, they did not present the QoL scores in isolation. They appeared to have studied the same group of participants as Hu et al. (2012) and followed up these patients a year later but focused on pain.

4.3.5 Discussion
This review on the QoL and participation outcomes of the earthquake injured population identified a paucity of literature. There were no studies identified that investigated participation and employment outcomes after earthquake-related injuries in the developed world. The geographical location of recent significant earthquakes mainly being in developing countries may account for this. Developing countries typically have fewer rehabilitation health care professionals (World Health Organisation, 2011); for example, a survey of occupational therapists indicated there were five occupational therapists per 10,000 population in NZ and the United Kingdom, compared to one in China and none in Pakistan and India (World Health Organisation, 2011). Similar findings were recorded for physiotherapists. Developing countries also have fewer specialist rehabilitation facilities and rehabilitation physicians. Following the Pakistan, Armenian and Haiti earthquakes specialist SCI centres were established as there were not the facilities available to care for the large numbers of people with SCI (Burns, A.S. & O'Connell, 2012; Burns, A.S. et al., 2012). With the low numbers of appropriately trained therapists, it is understandable that participation and vocational outcomes are low in the rehabilitation priorities. In addition, developing countries have fewer legislative and financial supports available for people with disabilities, resulting in reduced employment opportunities for individuals with disabilities (World Health Organisation, 2011). Irshad et al. (2012) highlighted different outcomes across male and female paraplegics injured in the
Pakistan earthquake. Where societal expectations of individuals with disabilities are lower and environmental and cultural differences exist, people with disabilities have fewer opportunities to achieve independence and actively contribute to their community.

Effective rehabilitation after injury is necessary to maximise functional outcomes but is also needed to address participation, such as RTW (Reinhardt et al., 2011). However, the rehabilitation available in developing countries after an earthquake injury may not be effective, may miss crucial intervention time frames, or may not be of adequate duration to provide people with the resources they need to gain employment or to have a high QoL in their community environment (Reinhardt et al., 2011). Frequently, the international assistance given to developing countries following a disaster focused on the immediate response period, which may increase survival, but international aid and support are frequently withdrawn before the injured survivors face their hardest challenges; that of returning to life in an earthquake damaged community, perhaps without appropriate skills and knowledge to be able to participate fully in their communities.

While the studies in the current review indicate that an earthquake injury may result in reduced QoL and poor participation outcomes, they are affected by poor study design and low population numbers. This may be a consequence of the unpredictable nature of earthquakes which makes pre-planning of earthquake research difficult as well as the mass casualties associated with earthquakes. For example Sudaryo et al. (2012) identified issues with inaccurate, incomplete and missing documentation in more than 50% of the medical records they located. This is a problem in disaster situations resulting in mass casualties when individuals are treated at multiple facilities, including field hospitals. Unfortunately, inaccuracies in medical notes may contribute to misdiagnosis and cause inaccuracies in the research results. Poor representation of the overall injuries was seen; for example, Hu et al. (2012) included 24 participants with SCI in their study, while Tasiemski et al. (2010) included 14 participants with SCI from the same hospital and this represented only a small percentage of the reported 374,649 of the Wenchuan earthquake, which included over 2000 SCI (Li & Pan, 2009; Yang et al., 2009) in the injured population.
The quality issues of the studies included issues with incomplete data and choice of measures. Nine people (64.2%) declined to answer the question on sexual life in the study by Tasiemski et al. (2010), perhaps because of participant embarrassment as the questionnaires were administrated face-to-face due to poor literacy in the participants. Sudaryo et al. (2012) used the Indonesia Health Related Quality of Life Questionnaire and then adapted it to the disaster situation. Although the authors did not specify how it was adapted; it appears the QoL attributes were renamed. In addition, it was not clear if the psychometric properties of the adapted scale were re-established. These factors prevent comparison to other studies. Many of the studies missed out important information, Hu et al. (2012) provided no information on the process of translation of the measures and also failed to explain what services were received during the inpatient and post discharge care, while Roy et al. (2005) reported a wide range of outcomes from their interviews with participants but these are not all linked to supporting evidence, preventing evaluation and limiting the interpretation of the information. For example, Zhang, X. et al. (2012) evaluated outcomes of all fracture victims with varying levels of rehabilitation but there was no explanation of why the participants received different rehabilitation and what that rehabilitation consisted of. Nor did they provide detailed classification of fracture type, or injury severity. Their results reveal more about the need for improved rehabilitation after a disaster of this type rather than the outcomes of the injured earthquake survivors.

Only two studies had control groups, Sudaryo et al. (2012) compared QoL and disability in an injured and non-injured group of participants living in Padang after the 2009 earthquake but there were significant demographic differences between the two groups and this limited the value of comparisons. Unfortunately, there was no clear indication of why the differences in rehabilitation occurred, or any measure of injury severity across the groups. So while their results indicate the outcomes at 27 months were better for earthquake fracture victims who received rehabilitation than for those who did not (Zhang et al., 2012), there remains no clear evidence on whether rehabilitation was the cause of that difference or the optimal type or duration of rehabilitation. Delauche et al. (2013) chose to compare QoL in their participants to a reference group of Swedish subjects with ACL repairs; however, ACL and traumatic amputation have different clinical presentation and expected outcomes. In addition, the
social structures of Sweden and Haiti are very different and so there may be many reasons why the Swedish subjects had a higher QoL.

QoL is difficult to measure (Dijkers, 1999, 2003, 2007) with no agreed definition and multiple outcome measures (Section 3.4). The diversity in the measures used across this study made comparisons across the studies difficult. There is a growing volume of literature that documents reduced QoL in trauma survivors (O'Donnell et al., 2005; Soberg, Bautz-Holter, Roise, & Finset, 2007; Vles et al., 2005); this work is predominantly from developed countries. The comparison of QoL outcomes between countries has been acknowledged as difficult (Geyh et al., 2012). Hu et al. (2012) found QoL improved in earthquake survivors with SCI from hospital discharge to one year later in the community. This was supported by results from Sudaryo et al. (2012) who showed incremental improvements in QoL between baseline and six months, although these consistently remained lower than a non-injured control group. However, both these studies used different QoL measures, again, making it difficult to directly compare results.

Participation measures were poorly documented in the injured survivors of earthquakes. Although RTW rates were reported in the available studies, none of the authors provided a definition of work/employment. As previously discussed, RTW is multifaceted and can be measured in multiple ways (Young, Roessler, et al., 2005a; Young, Wasiak, et al., 2005) (Section 3.5.1). Although some of the studies presented pre-earthquake and post-earthquake employment rates, no additional qualifiers such as hours of work, or type of employment were provided, which limits any meaningful interpretation of the data. Studies from China and India found that the injured individuals had not recovered economically (Hu et al. (2012), Roy et al. (2005), and Zhang, X. et al. (2012)). Delauche et al. (2013) showed 30% of their participants were working at two years after the earthquake, and just over half the participants had lost work since the earthquake. They reported 23.5% of the participants were still living in tents at this time and 46% of the participants were not getting enough food; however, it is unclear how many of the working participants were not getting enough food. A study of non-earthquake injured SCI individuals from across India by Gupta, Solomon, and Raja (2011) reported RTW rates in Indian SCI of 41%. All the employed participants in Gupta’s study resided in specialised SCI centres, run by the armed forces or non-
governmental agencies, rather than living independently in the community, therefore, the results are difficult to compare.

Landry (2010) believes western countries have moral and ethical accountability to provide long term disability support for the people they help survive post-earthquake. Better information is therefore required on the long-term outcomes of these individuals.

4.3.6 Conclusions
This systematic review identified seven studies which examined QoL and participation outcomes of individuals with injury as a result of an earthquake. The studies reported outcomes of a small percentage of injured earthquake survivors. The results indicate earthquake survivors in developing countries who sustain SCI and fractures continue to have limitations in functioning, participation and reduced QoL between 18 months and two years post injury. Gender-related issues may be magnified by the increased number of injured females. No studies were from developed countries. Future studies would benefit from the use of standardised outcome measures which would allow across country comparison.

4.3.7 Future research areas
The results of this review indicate further research is required on the participation and QoL outcomes for individuals injured as the result of an earthquake. Methodological limitations are more likely after natural disaster as research is often reactive and careful pre-planning is more difficult. However, care needs to be taken to maximise the quality of these studies by choosing appropriate outcome measures that actually measure the construct under investigation. Further research into outcomes following injury in earthquakes is required in both developed and developing countries, with an emphasis on any specific differences that arise as a result of earthquake injury.

4.3.8 Limitations of review
This systematic review was limited by the inclusion of only articles published in the English language. In addition, a review of the grey literature was not included in the study protocol which may have yielded further information. This means some unpublished studies and those in other languages have not been considered in this review.
4.4 Summary

This chapter has shown that, compared to trauma, earthquake trauma survivors are more likely to be female. There are two age groups of people typically injured by earthquakes, children and older adults. Earthquake survivors are usually injured by falling masonry or entrapment resulting in a high prevalence of crush injuries and the associated sequelae. Musculoskeletal injuries are the most common. There is a high incidence of SCI but these are typically thoracic and complete injuries, which differ from traumatic SCI. Earthquake trauma survivors, are more likely to have PTSD. The functional outcomes of injured earthquake survivors have not been extensively researched, but like trauma patients, they have ongoing functional impairments. Because most major earthquakes to date have been in developing countries, injured earthquake survivors are less likely to have access to rehabilitation services. Although there is a large literature base on RTW following traumatic injury, little is known about the RTW outcomes following earthquake injury. Drawing on RTW research in the trauma population, the influence of environmental factors needs to be considered in RTW for earthquake trauma populations. The literature suggests that older females who are injured in trauma are less likely to RTW. These factors may contribute to the low RTW reported in the earthquake population, but has not been substantiated.

These findings further informed the empirical phase of the PhD work – the first qualitative study on employment outcomes of injured earthquake survivors from a developed country. The review highlighted that my intention to use a qualitative methodology with a longitudinal follow-up was novel and, as such, the research would add to the existing trauma literature by furthering information on the different stages of RTW.

The contextual background to this study was presented in Chapter 2, with Chapters 3 and 4 reviewing the pertinent literature on the epidemiology, functional, and RTW outcomes after trauma and earthquake trauma. Augmented by the findings of the systematic review, the literature reviewed has informed the aim of this thesis: To generate an explanation of the impacts on RTW (key component of participation) after injury in the Christchurch earthquake. The next chapter will outline the methodology and the specific methods used to collect and analyse the data.
5 Methodology and methods

The purpose of this chapter is to describe the methodological choices I made in relation to the second phase of the research. The choice of the methodology and methods for my research were driven by the research question that sought to generate an explanation of the impacts on RTW for the injured survivors of the Christchurch earthquake. Although there are multiple ways to answer this question I chose to use a constructivist grounded theory methodology, based on the work of Kathy Charmaz (Charmaz, 2006, 2014; Charmaz & Bryant, 2010). The next sections will describe my rationale for these decisions based on the four research elements Crotty (1998) proposed must be considered in any research process: epistemology, theoretical perspective, methodology and methods.

5.1 Methodological positioning

All of us bring philosophical beliefs to our research which shape how we formulate and answer the research question (Creswell, 2013). To be clear about the decision making process in a research project, and to accurately interpret its findings, the philosophical underpinnings of research should be clear. Crotty (1998) considers there is a succession of decisions to be made when designing research to ensure a harmonious match of the four elements of design. The first decision is based around the theory of knowledge, or epistemology. The epistemology informs the second decision; the theoretical perspective, which is the philosophical stance that provides the context for the methodology (Lincoln, Lynham, & Guba, 2011). The next decision is the methodology, the process of finding knowledge (Guba, 1990), the strategy or process which informs the final decision in the research design, the choice of methods to be used, the nuts and bolts of the study, and the actual techniques or procedures used to gather and analyse data (Crotty, 1998).

Although Crotty (1998) does not directly consider ontology in his schema; epistemology and ontology are closely aligned, and the two sit together to inform the theoretical perspective. Ontology is the nature of reality, what can be known (Guba & Lincoln, 2000), while epistemology is our intrinsic beliefs about the creation of knowledge, “How we know what we know” (Crotty, 1998) and how knowledge can be discovered.
There are a number of different ontological perspectives that can underpin a study (Guba & Lincoln, 2000), and realism and relativism hold two opposing points on the ontological continuum. Realists hold a belief that “reality exists out there” (Guba, 1990) while, at the opposing end of the continuum, the relativist ontology deems multiple realities exist in the form of multiple mental constructions that are socially and experientially based and are dependent on the person who holds them for their form and content (Guba, 1990).

Crotty (1998) claims that epistemology and ontology are complementary and it follows that although epistemological stances are also diverse, they too can be considered to follow a continuum, with an objectivist approach at one end of the spectrum, which holds that there is a single truth that can be discovered and, “meaning exists apart from the operation of consciousness”, which is complementary with the realist ontology (Crotty, 1998). The constructivist epistemology is towards the other end of the continuum and is complementary to the relativist ontological position. This constructivist epistemology posits that no one single ‘truth’ exists, but rather there are individual reconstructions of ‘truth’ that merge around a consensus (Gardner, 2010), with collective similarities and differences that form a collective truth. “There is no meaning without a mind. Meaning is not discovered but constructed” (Crotty, 1998, p. 8), knowledge is reliant on the perception, or interpretation of the social experience.

This study is based on a constructivist epistemology and the complementary relativist ontology, but draws also on constructionism. The terms social constructionism and constructivism are often used interchangeably, especially in the context of constructivist grounded theory but they are subtly different. Andrews (2012) describes social constructionism as having a social focus, with knowledge created through the interaction of individuals within society (Schwandt, 2003); while constructivism purports the individual uses a cognitive process to mentally construct their world. This study focuses primarily on the cognitive sense making the individual does internally, but, because it is exploring RTW in a post-earthquake environment, it also considers the sense making the individual does with others – their family, health professionals, employers – and, indeed, the social connection with others who experienced ‘the earthquake’.
As mentioned earlier, the second decision in planning research is the theoretical perspective, the research paradigm (Lincoln, Lynham, & Guba, 2011) or interpretative framework (Creswell, 2013), which is the philosophical stance that provides the context for the methodology. In addition to the ontological and epistemological stance of the researcher, the theoretical perspective also takes into account the axiological beliefs (the roles of values of the researcher).

Table 5.1 The relationship between theoretical framework and philosophical beliefs

<table>
<thead>
<tr>
<th>Interpretive framework</th>
<th>Ontology</th>
<th>Epistemology</th>
<th>Roles and values of the researcher</th>
<th>Methodological beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivist/Postpositivism</td>
<td>A single reality</td>
<td>Reality approximated. Identified through hypothesis testing, research and statistics</td>
<td>The bias of the researcher must be controlled so the researcher is objective and does not influence the study findings</td>
<td>Scientific, theory or hypothesis testing deductive</td>
</tr>
<tr>
<td>Social constructivism (Creswell, 2013) Interpretivism (Lincoln et al., 2011)</td>
<td>Multiple realities</td>
<td>Reality is co-constructed between the researcher and the research participants</td>
<td>Individuals values are acknowledged and honoured</td>
<td>Inductive methods, emergent ideas a sense of consensus</td>
</tr>
<tr>
<td>Critical or disability theory</td>
<td>Reality based on identity or power. Privilege and oppression based on race gender ability, etc.</td>
<td>Reality is known through studying social structures, power, freedom and oppression</td>
<td>The diversity of values is emphasised from the standpoints of the various communities</td>
<td>Start with assumption of power discrepancy. Documents and call for change</td>
</tr>
</tbody>
</table>

This table is based on Creswell (2013) and Lincoln et al. (2011).

There are a large number of interpretive frameworks, but considering my ontological and epistemological beliefs, the theoretical perspective of interpretivism was chosen. Table 5.1 shows this in comparison to two other examples of frameworks. Interpretivism or social constructivism aligns well with qualitative research which generates ideas and hypothesis through inductive reasoning, and often uses an iterative approach where the research methods are altered in light of the information uncovered (Greenhalgh & Taylor, 1997). Constructivist research often looks at processes which
involve the interaction of people and take into account the specific contexts in which the interaction occurs, such as the RTW for injured survivors in the context of the Christchurch earthquake; and the researcher makes an interpretation of the meaning they discover (Creswell, 2013). Charmaz declares her version of grounded theory is interpretivist (Charmaz, 2014), and so the researcher interprets the participants’ actions and meanings, trying to understand how they construct their reality.

The methodology is the process or design of the research (Crotty, 1998), the third decision to be made. The same methodology can be applied from a number of theoretical perspectives, which it is why it is important for a researcher to have decided on the theoretical underpinnings of their study and declare it. This study uses a constructivist grounded theory methodology, conducted from an interpretive theoretical perspective (Charmaz, 2006, 2014). This will be detailed further in Section 5.2.2. Grounded theory was chosen for this research because it generates theory and allows the explanation and understanding of a social process, (Hunter, Murphy, Grealish, Casey, & Keady, 2011; Polit & Beck, 2006). A theory “states relationships between abstract concepts and may aim for either explanation or understanding” (Thornberg & Charmaz, 2012, p. 41). Grounded theory focuses on the interaction between the individual and the phenomenon studied (Urquhart, C., 2013). Using a systematic process, grounded theory is generated from the ground up, starting with the data which are coded through higher levels of analysis. I considered a methodology focused on understanding process was vital for this project exploring the process of RTW for injured survivors of the Christchurch earthquake, instead of ethnography, which would generate description and interpretation of cultural behaviour (Polit & Beck, 2006), or phenomenology, which would provide the lived experiences of RTW (Polit & Beck, 2006). Grounded theory is also advocated in areas where little information is known (Creswell, 2013), and the findings of my systematic review made it apparent there was limited information about this topic. In addition, the existing RTW information on injured earthquake survivors has been mostly quantitative, thus failing to explain the impacts on RTW. Although research in trauma has identified multiple factors which influence RTW, outcomes following earthquake trauma are different and I could not assume that this evidence would be transferable across injuries or environments to this current study.
The final consideration was the methods, which are the techniques or procedures used to gather and analyse data (Crotty, 1998, p. 3). I predominantly used in depth semi-structured interviews to collect the data, which fit well with the grounded theory methodology (Charmaz, 2001; Hallberg, 2006).

In summary, this study uses a constructivist grounded theory methodology underpinned by relativist ontology, and constructivist epistemology, within an interpretivist theoretical perspective (Figure 5.1). The next section describes in detail the constructivist grounded theory methodology which has guided all stages of the research. The methods used for the study are then described in Section 5.3.

Figure 5.1 Ontological, epistemological and methodological influences of the study
5.2 Grounded theory

As stated, this study used a constructivist approach influenced by Charmaz (Charmaz, 2000, 2002, 2006; Charmaz & Bryant, 2010). In order to understand this approach to grounded theory it is important to contextualise the methodology’s origins and development in relation to the other grounded theory approaches; Classic or Traditional grounded theory and Straussian or Evolved grounded theory. The following section outlines the history of grounded theory from its conception to the evolution of the modern factions. Next, the different theoretical perspectives of grounded theory are discussed to clarify the differences between the three perspectives. A description of constructivist grounded theory is then presented, followed by the methods used in this study.

5.2.1 Development and application of grounded theory

Grounded theory was developed in 1965 and founded by two sociologists, Barney Glasser and Anselm Strauss. The two co-creators of grounded theory collaborated on a project called Awareness of Dying. In the course of their research they established grounded theory methodology. Their seminal text, ‘The Discovery of Grounded Theory’ describing their new methodology, was published in 1967 (Glaser & Strauss, 1967). At that time a positivist research paradigm prevailed, typified by hypothesis testing and quantitative methods, and qualitative research was viewed as unscientific, using unsystematic methods, based on anecdotal evidence, and impressionist (Charmaz, 2014). Their book offered a rationale for theory that was grounded: developed and generated from the data which emerges during research projects (Mills, Bonner, & Francis, 2006a), and so legitimised careful qualitative research. Each co-creator contributed distinct characteristics to the methodology. Barney Glaser’s quantitative (positivist) background from his training at Columbia University is evident in the emergent discoveries and the quantitative feel to the language. Anselm Strauss brought a style of pragmatism and interactionism, influenced by John Dewey and George Mead, from his time at the University of Chicago School (Corbin & Strauss, 2008). Strauss, thus, placed emphasis on process, rather than the structure of the social and subjective meanings and problem solving. Grounded theory methodology described by Glaser and Strauss (1967) is built upon generating theory which is grounded in the data.
Grounded theory diverged into distinct perspectives of classic (traditional) and Struassian (evolved) grounded theory when the two founding authors parted ways, disagreeing about the meanings and procedures of grounded theory. Strauss went on to co-author the basics of qualitative research with Julia Corbin (Strauss & Corbin, 1990) with the intention of explaining grounded theory further. They produced an approach to grounded theory which was more procedural, where verification predominated over the constant comparative methods, with more emphasis placed on using structured methods to fit the final codes into a framework. This was viewed as a new version of grounded theory, or evolved grounded theory (Mills, Bonner, & Francis, 2006). Strauss and Corbin’s approach was criticised by Glaser for forcing the data by being too prescriptive and structured, thereby missing the true inductive nature of grounded theory. Melia (1996) describes: “The procedures are getting in the way; the technical tail is beginning to wag the theoretical dog” (p 376). Although there is criticism of Strauss and Corbin’s more structured approach, their book provided detailed descriptions of the processes of grounded theory and was written in a manner that researchers could easily follow, especially those without the benefit of specialist mentoring.

Strauss and Corbin produced two further editions of this book, the latter published after Strauss’ death (with Julia Corbin as the first author) (Corbin & Strauss, 2008). Glaser staunchly maintains this is no longer representing grounded theory describing it instead as a methodology of, “full conceptual description” (Glaser, 1992). However, Corbin disputed this interpretation in the third edition of the book and maintains she is not, “delineating a whole new method [of grounded theory]” but “modernising the method” she was taught (Corbin & Strauss, 2008, p. ix). It has been argued that although traditional and evolved grounded theory look similar on the surface, differences between the two perspectives lie at the process level (with differences in how the data are handled, the analytic process the researcher undertakes and the theory construction), which reflect differing philosophical assumptions (Walker & Myrick, 2006). (This is expanded on in Section 5.2.5 below).

The third perspective of grounded theory is the constructivist approach. Kathy Charmaz was the first researcher to describe her approach as explicitly constructivist (Mills et al., 2006), but many authors have subsequently followed her approach (Bryant, 2003; Bryant & Charmaz, 2007; Clarke, 2005). The constructivist grounded theory
methodology acknowledges the researcher to be an active participant in constructing the research rather than assuming the theory can be discovered or emerge from the data separate from the researcher (Charmaz, 2006). Charmaz sees that data acquire joint meaning apportioned by the researcher and participant in their collaboration to produce the data with the individual characteristics of the researcher (their age, gender, background and life experiences) influencing their observations and analysis (Charmaz, 1995). The interactive process of data collection with simultaneous analysis yields: “one interpretation among multiple interpretations, of a shared or individual reality” (Charmaz, 2000, p. 523). Charmaz argues the researcher’s analysis depicts the story told by the participants and the social processes of the situation, as interpreted through the lens of the researcher. In contrast, Glasser argued that the theory inherent in the data will emerge through the observation of a more passive researcher, a characteristic commonly associated with a positivist paradigm (Bryant, 2003; Charmaz, 2000). Charmaz’s argument seems more justifiable as the characteristics of the researcher are inherent in their interpretations of the information, even if only at an unconscious level. The traditional method of grounded theory does not explore the perspectives of participants in the same descriptive manner as the constructivist grounded theory; rather, they are abstracted to a higher level of interpretation (Breckenridge, Jones, Elliott, & Nicol, 2012) by conceptualising the phenomena, which are derived from the data collected from the participants, but does not describe the participants’ perspectives. In more recent times grounded theory has been adapted to fit with feminism, critical thinking and postmodernism (Mills et al., 2006a); however, the three perspectives of grounded theory presented above are most readily recognised and used by researchers.

5.2.2 Fundamental differences in the foundations of grounded theory
The ontological and epistemological underpinnings of the different grounded theories help clarify the differences between the approaches. Although Glaser and Strauss failed to make explicit the paradigm underpinning their methodology (McCann & Clark, 2003b; Mills et al., 2006), Glaser ascertains that grounded theory is epistemologically and ontologically neutral (Breckenridge et al., 2012). Many authors dispute his assertion and have instead theorised the ontological and epistemological background of the methodology. This has led to a range of speculations, including a critical realist ontology (Annells, 1996), a positivist epistemology (Charmaz & Bryant, 2010) and pragmatism (Nathaniel, 2011). Although Glaser asserts grounded theory is neutral,
inferences from his descriptions of the methodology are not (Nathaniel, 2011). Glaser (1978) believes the procedures of grounded theory maintain objectivity in the researcher, assuming an objective reality. Moreover, Glaser’s depiction of discovering a latent process, and his belief that in grounded theory the researcher objectively figures out what is happening and then conceptualises it, is clearly related to objective science (Nathaniel, 2011).

Evolved grounded theory, as described by Strauss and Corbin, is considered less objectivist (McCann & Clark, 2003b) as it recognises the involvement of the researcher during data collection and acknowledges the experiential knowledge of the researcher during data analysis. Annells (1996) postulates that evolved grounded theory displays a relativist approach, as illustrated by the viewpoint of Strauss and Corbin (1990, p. 22) that: “A reality that cannot actually be known, but is always interpreted.” Because evolved grounded theory places more importance on time and place, it shows a further alignment with relativist ontology.

McCann and Clark (2003b) consider that evolved grounded theory displays social constructivist ontology and belongs to a poststructuralist paradigm. Annells (1996) goes a stage further and determines Strauss and Corbin display a subjectivist epistemology. In fact, in the latest edition of the book, Corbin admits to a shift of viewpoint over time, and states that, “Concepts and theories are constructed by researchers out of stories that are constructed by research participants who are trying to make sense out of their experiences and/or lives, both to the researcher and themselves” (Corbin & Strauss, 2008, p. 10). This view aligns more closely with that of constructivist grounded theory.

The constructivist epistemology assumes there are individual reconstructions of ‘truth’ that merge around a consensus (Gardner, 2010). Charmaz has always been explicit in declaring the constructivist underpinnings of her version of grounded theory (Charmaz, 2000, 2006). Mills et al. (2006a, p. 9) classify constructivist grounded theory as: “ontologically relativist and epistemologically subjectivist” in that constructivist grounded theory considers meaning is imposed on the object from the subject (Crotty, 1998); however, this fails to acknowledge the co-construction of the data between the researcher and the participant that Charmaz makes explicit.

Schatzman (1991, p. 306) argues, “Grounded theory does not have an easily recognisable research paradigm for anchoring the several operations that constitute it.”
Many contemporary researchers advocate the use of grounded theory within a wide range of research paradigms. Mills et al. (2006 p. 26) describe a, “methodological spiral” on which all variations of grounded theory exist, starting with traditional grounded theory in the centre and winding out to incorporate multiple perspectives, so that researchers, “who first identify their ontological and epistemological position, are able to choose a point on the methodological spiral of grounded theory where they feel theoretically comfortable” (Mills et al., 2006 p. 32). The marked differences between the different approaches to grounded theory are evident in the epistemological underpinnings of the differing grounded theory approaches and represent: “maturation and further development of the methodology rather than its demise” (McCann and Clark, 2003b, p. 27). These differences are shown in Table 5.2.
<table>
<thead>
<tr>
<th>Reality</th>
<th>Classical grounded theory</th>
<th>Constructivist grounded theory</th>
<th>Applied to this thesis research question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reality</td>
<td>Assumes an external reality</td>
<td>Assumes multiple realities</td>
<td>Each participant relayed the story of their reality of the situation. No one reality is more real than the other.</td>
</tr>
<tr>
<td>Data</td>
<td>Data are discovered</td>
<td>There is mutual construction of data through interaction</td>
<td>The data were constructed from interviews, therefore the questions I asked and the prompts I made as the researcher as I followed up on answers to the questions determined what information was collected</td>
</tr>
<tr>
<td>Conceptualisations</td>
<td>Emerge from data</td>
<td>The researcher constructs categories</td>
<td>Although the information emerges from the data, as the researcher, I determined the categories from the information I considered most important or relevant</td>
</tr>
<tr>
<td>Representation of data</td>
<td>Unproblematic</td>
<td>Problematic, relativistic, situational, and partial</td>
<td>The representation of the data is contextual to the situation (post-earthquake Christchurch) and the questions asked, the data collected and the interpretations made at that time so will never be a complete picture</td>
</tr>
<tr>
<td>Researcher</td>
<td>Neutral and passive</td>
<td>Bring their own values, priorities, positions, and actions which affect their views.</td>
<td>My background as the researcher consciously or unconsciously determined each stage of the research from the co-construction of the data with the participants, to the coding and analytical decisions</td>
</tr>
</tbody>
</table>
5.2.3 Justification of rationale for using constructivist grounded theory

As mentioned previously, the choice of research methodology for this research was ultimately influenced by the research question (Crotty, 1998). The focus of this project was the RTW process for the individuals injured in the Christchurch February 22nd earthquake. I assumed the nature of the injury and the completion of the rehabilitation process would dictate the involvement of many organisations and stakeholders before RTW variables were even considered. Therefore, this research was aimed at developing a theory within a complex social environment, rather than exploring the experiences of a homogenous group in a phenomenological manner.

While employment has been widely researched in the disability field, the specificity of focus on earthquake trauma means that little research has been done in the area, which is congruent with a grounded theory approach (Bluff, 2005). It was also important to me that I explore the field with fresh eyes, rather than test prior theories of employment. I was particularly interested in RTW in a post-earthquake environment, which had not been incorporated in any of the existing RTW theories.

In choosing constructivist grounded theory I took into account a number of factors. As a resident of Christchurch in 2011, I experienced the February 22nd earthquake first-hand. At the time I worked as a physiotherapist at the Burwood Spinal Unit where I developed a therapeutic relationship with a number of individuals injured in the earthquake who underwent rehabilitation at the Burwood Hospital site. My previous research experience within the SCI and multi-trauma fields (Hay-Smith, Dickson, Nunnerley, & Sinnott, 2013; Nunnerley, Hay-Smith, & Dean, 2013; Nunnerley, Sinnott, Hooper, Singhal, & Vincent, 2011) contributed to my knowledge of existing multi-trauma employment literature so I could not adhere to a rigid avoidance of the literature in the substantive area as advocated by a traditional grounded theory approach (Glaser, 1978, 2002). I have a more natural alignment with the approach taken by Charmaz (Charmaz, 2006, 2014) that accommodates previous relationships and prior knowledge, rather than proposing the researcher should take the stance of a passive observer. My personal epistemological and ontological beliefs also influenced the decision to use a constructivist approach to grounded theory. Like Charmaz I consider that data collection using interviews creates a co-construction of data between me (as the researcher) and the participants (Charmaz, 2001, 2005). I argue it is inevitable that any analysis of data is constructed by me as the researcher. I could not prevent my
worldview influencing the interview interactions or my interpretations of the data, as is advocated in a traditional grounded theory approach (Glaser, 2002). I also argue that any results obtained are only one interpretation of the truth.

The core components of grounded theory methods will now be discussed, highlighting aspects specific to constructivist grounded theory, as subtle differences exist in how the common characteristics of grounded theory are adopted by the different perspectives of grounded theory (McCann & Clark, 2003b).

### 5.2.4 Core components of grounded theory

![Diagrammatic representation of grounded theory](image)

**Figure 5.2 Diagrammatic representation of grounded theory**

(Based on the model by Birks and Mills (2011))

In their guide to grounded theory, Birks and Mills (2011) identify a comprehensive list of the essential components of the grounded theory method, which they describe within a cog analogy (Figure 5.2). These include concurrent data collection, constant comparative analysis, purposive and theoretic sampling, coding and theoretical integration.
The process of writing memos is considered as critical to all other components of the theory. Birks and Mills (2011, p. 13) illustrate the importance of memos, describing their role in the analogy as “lubricat[ing]” the cogs. It is the smaller cogs, or higher levels of abstraction, which move the research beyond descriptive analysis and into theoretical development (Birks & Mills, 2011). Each key component of the methods is discussed below.

### 5.2.5 Concurrent data generation; constant comparative analysis

Constant comparison is the foundation of grounded theory and a defining concept in all versions of grounded theory. The process of constant comparison starts with concurrent data collection/generation and analysis. Creswell (2007) describes this as a zigzag process: “out into the field to gather information, analyse the data, back into the field to gather more information, analyse the data and so forth” (p. 57). This constant comparison is central to the analysis process. Initially, comparisons are made within the raw data by comparing codes in each interview, questioning their similarities and differences, asking how they differ, and then repeating this comparison across other interviews. At the next level of analysis codes and categories are compared with the previous codes and categories; at each stage the researcher always returns to the data for verification (Mills et al., 2006).

### 5.2.6 Coding and categorisation of data

Grounded theory uses specific data analysis strategies, which start with the coding of the data. These differ between the grounded theory perspectives (Table 5.3). Each key component of the methods is discussed below.

#### Table 5.3 Coding differences across the grounded theory perspectives

<table>
<thead>
<tr>
<th>Grounded theory perspective</th>
<th>First level coding</th>
<th>Intermediate coding</th>
<th>Advanced coding</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional grounded theory</td>
<td>Open</td>
<td>Selective</td>
<td>Theoretical Coding</td>
<td>(Birks &amp; Mills, 2011; Glaser, 1978; Glaser &amp; Strauss, 1967)</td>
</tr>
<tr>
<td>Straussian grounded theory</td>
<td>Open</td>
<td>Axial</td>
<td>Selective Coding</td>
<td>(Birks &amp; Mills, 2011; Corbin &amp; Strauss, 2008; Walker &amp; Myrick, 2006)</td>
</tr>
<tr>
<td>Constructivist grounded theory</td>
<td>Initial</td>
<td>Focused</td>
<td>Theoretical Coding</td>
<td>(Birks &amp; Mills, 2011; Charmaz, 2002, 2005, 2006; Charmaz &amp; Bryant, 2010)</td>
</tr>
</tbody>
</table>
Coding, of all types, is the process of assigning concepts to the data and provides the bones of the analytic scaffolding on which theory is built (Charmaz, 2006). Grounded theory initially uses inductive analysis, determining codes that are grounded in the data, as described previously. Constructivist grounded theory starts with initial coding, where each line, or each short passage of data, is broken down through careful analysis and labelled succinctly to describe the content (Charmaz, 2006). The focus on small volumes of data accurately captures the essence of the participants’ meaning and prevents assumptions or biased interpretations of the data.

Focused coding is the intermediate level of coding where the most significant early codes are determined and further developed and refined into categories. Before the final level of analysis, theoretical coding determines the relationships between the categories. The constructivist approach differs from the other grounded theory approaches here by making focused codes active (Charmaz, 1995).

As the analytic process develops an abductive logic is implemented so the analytic decisions made in determining categories are verified by forming hypotheses and then going back and testing them within the data (Charmaz, 2006). Thus, the initial hypotheses are formed from the analysis of the data and then further substantiated by theoretical sampling and additional data collection, while re-examining the data through constant comparison. Constructivist grounded theory explicitly acknowledges the individual interpretation of the researcher within the coding process - the researcher identifies the data to be coded, allocates labels and determines the significance of the information (Charmaz, 2006).

5.2.7 Theoretical sensitivity

Theoretical sensitivity is the insight the researcher brings to their topic, how they approach their subject, their ability to appreciate the nuances evident in the participants’ words, their ability to recreate meaning from the data and distinguish between important and irrelevant facts, all the while, staying emerged in the data (Mills et al., 2006). Thus, sensitivity ensures the coding, analysis and subsequent theory development comes from the data not the pre-existing ideas of the researcher. Glaser describes a tabula rasa (blank slate) (Clarke, 2005) that the researcher should bring to the project to prevent possible bias and pre-interpretation of the data rather than the emergence of information. According to the classical approach to grounded theory a
strict adherence to the methodology will account for researcher bias (Breckenridge et al., 2012). I consider the constructivist approach has a more rational approach to this and acknowledges the difficulty in identifying important facts and appreciating nuances without having a background to their interpretations, so the researcher is seen to use previous experience in the construction of the codes but do not impose preconceptions on the data. However, the approach does indicate that the researcher should acknowledge and document any preconceptions. However, if they are founded in the data they are accepted. Thus, the researcher’s previous experience and knowledge can add value to the research and act as a starting point to the analysis.

5.2.8 Theoretical integration
Charmaz (2006) defines grounded theory as: “the imaginative understanding of the phenomenon,” so a constructivist grounded theory assumes: “emergent, multiple realities; indeterminacy; facts and values as inextricably linked; truth as provisional; and social life as procedural” (pp. 126-127). Recognising the theory is derived from the imagination of the researcher, who incorporates their interpretation of multiple realities presented through the data collected, and renders an understanding which is contextually linked to a time and place. That is not to say the results are not useful in alternative contexts. Rather, the crucial outcome is an in depth understanding that can produce explorations and predictions, which Charmaz suggests is of greater importance than forming a theory.

5.2.9 The contribution of literature
The role of the literature review in grounded theory is dependent on the version of grounded theory being used, and has been fervently debated (Giles, King, & de Lacey, 2013). Glaser takes the most extreme view that the literature should not be used as a basis for the investigation, in order not to bias or pre-determine the interpretations the researcher makes when analysing the data (Glaser & Strauss, 1967). From a constructivist perspective the literature is considered potentially of benefit. Where theoretical concepts may provide starting points for looking at data but do not offer automatic codes for analysing these data (Charmaz, 2006, p. 68), an understanding of the literature can help focus the research question to establish meaningful research but also provides background information for the researcher. This can help with the theoretical sensitivity of the researcher, improving their ability to identify the relevant
data, identify new ideas and provide a focus for further information from within the data.

The ‘reality’ is that as a clinician and researcher it is impossible to approach the research without previous knowledge. In doctoral and human-based studies, a literature review is essential to receive ethical committee approval for studies and to ensure the originality of the research. Arguably – a review is, indeed, essential to expose whether further work is required. It is also clearly unethical to expose vulnerable groups to recalling sensitive data if the results of the study are not going to progress the research in the field. Further critical consideration of the literature can develop thinking and progress existing research. However, for all grounded theory standpoints, the focus on the literature is more critical at the end of the project to relate the finished theory, which has emerged from the data, to existing concepts or theories (Bluff, 2005).

It is inevitable that researchers approach their research with prior views and assumptions, and also their knowledge of the field. Perhaps rather than expecting a, ‘blank slate’ as Glaser describes (Clarke, 2005), researchers must consider, and make transparent, their knowledge and the approach they are taking. This allows readers to interpret all stages of the research. For example, the approach to data collection (style, questions vs prompting), data interpretation (why some aspects are presented over others), the interpretation itself, (why some aspects are privileged) and the discussion (the implications of findings undoubtedly relating to things the researcher values or considers important). I presented my personal background of the study in Section 1.1. My pre-existing knowledge and understanding of RTW after an earthquake injury is demonstrated in the literature review and systematic reviews in Chapters 3 and 4 which were conducted prior to the grounded theory study. This information therefore informed my analysis.

5.3 Methods

The aim of this study is to explore the influences on the RTW for individuals injured as a result of the Christchurch earthquake, and the changes in their employment over time. The New Zealand Upper South B Regional Ethics Committee granted ethical approval for this study (URB/12/02/004, Appendix B).
5.3.1 Recruitment

A two-stage approach to recruitment was used. Initially, purposive sampling was used, where recruitment decisions were based around a predetermined set of criteria such as injury type, gender age, etc.; then, theoretical sampling was used once data were collected to further develop the theory (McCann & Clark, 2003a). Decisions about participant selection were based on the emerging information rather than predetermined criteria (Strauss & Corbin, 1990) and participants and documents were sampled to facilitate the category formation (Glaser & Strauss, 1967).

5.3.2 Injured earthquake survivors

To be included in the study participants needed to have sustained physical injuries as a result of the February 22nd Christchurch earthquake and live in NZ at the time of the interviews. Participants were identified from the RHISE database. Serious injuries were defined using the ACC criteria\(^2\). As there were only eight individuals who were classified as serious injuries by the ACC criteria, selection was extended to include individuals who had been admitted to Christchurch Hospital with at least a two-day hospital stay. While provision was made for translation services so non-English speakers could be included in the study this was not required.

The first strategy for recruitment of injured participants was to draw on the Canterbury District Health Board (CDHB) component of the RHISE database (Section 2.2.1). This method of recruitment did not result in sufficient participants so, with ethics committee approval, a second strategy was employed to recruit participants via referrals from other health professionals and responses to advertisements. The majority of participants were recruited through this strategy; most referrals came from the Orthopaedic Department, Christchurch Hospital.

Potential participants initially received a phone call from a researcher independent of the project (Figure 5.3). Participants recruited through the RHISE database were contacted by the RHISE research administer who was an investigator on the RHISE database and nurse researcher in the emergency medicine department at Christchurch Hospital (which was the first point of contact for earthquake injured survivors).

\(^2\) ACC criteria (as severe traumatic brain injury (NZGG, 2006); spinal cord injury (SCI) with spinal cord impairment AIS A-D (Maynard et al., 1997); or comparable diagnosis of multiple limb amputation; severe burns to 50%) (Personal communication ACC).
Demographics from data reviewed by primary researcher to determine if met sampling criteria

Recruited from RHISE database

Recruited from health professional referral

RHISE research administrator contacted participants by phone

Invited to participate through an independent researcher

Clinical researcher contacted participants by phone

Potential participants sent information sheet and consent form

No contact after seven days

Contact by researcher to answer any questions

No further contact

Consent returned

Contacted by primary researcher to arrange interview time

Contacted for follow up interview after 12 months

Decline

Decline

Figure 5.3 Recruitment Strategy - injured earthquake survivors
Potential participants identified from professional referrals or advertisements were contacted initially by a clinical researcher and physiotherapist based in the department of Orthopaedic Surgery and Musculoskeletal Medicine, University of Otago, Christchurch.

During the initial contact participants were asked if they were happy to receive an information sheet for the project. If they agreed an information and consent form for the study was sent to them (Appendix C). If the consent form was not returned within seven days I contacted the participant to answer any questions. Once a signed consent form was received I contacted participants to organise a convenient date and location for the interview. During this phone call participant demographics and their current work status were established.

Once the first-year interviews were analysed it became apparent that a broader perspective was needed to provide saturation of the categories and to further understand the influences on RTW following the Christchurch earthquake. Data from the first round of injured participants indicated vocational professionals involved in the RTW process and ACC case managers/coordinators were a vital component of the process. After gaining ethical approval recruitment was broadened to include recruitment to these two groups.

5.3.3 Recruitment professionals

Separate recruitment strategies were required for two professional groups, ACC employees and the vocational providers (Figure 5.4). Mirroring the recruitment for the injured participants the potential professional participants were also approached through an intermediary. The ACC research office was approached to recruit ACC employees who had been involved in the RTW of earthquake injured individuals. They contacted the Christchurch Branch manager, who sent information sheets (Appendix D) to all staff in the Christchurch ACC office who meet the criteria of working with an injured earthquake survivor. If staff showed an interest in the project the Christchurch branch manager passed on their details and I contacted them by email, answered any questions and organised a convenient interview time.
Figure 5.4 Recruitment for vocational professionals and ACC employees
Vocational professionals were recruited through either the manager or a contact person for the vocational services working in Christchurch, who forwarded the information sheet to appropriate staff and sought permission to pass on their contact information. I made direct contact with these staff who expressed an interest in being involved, answered any questions they had and organised a convenient interview time.

5.4 Data collection

In depth semi-structured interviews were the main method of data collection for the study. This is a common method for data collection in grounded theory (Glaser, 1992; Glaser & Strauss, 1967; Hallberg, 2006; Strauss & Corbin, 1990). A total of 39 interviews were used to achieve an in-depth exploration of the topic. Injured participants were interviewed twice, once in 2012 and then 12 months later. Details about the participants provided in the results (Section 6.1). The initial interview schedules were based on the findings from the systematic review, other literature and from input from a vocational practitioner. Ideally, these questions would have been formulated in consultation with someone with the lived experience of earthquake injury but this was not possible. Separate interview schedules were devised for those who had returned to work/productivity and those who had not. Initially, the injured earthquake participants were asked broad open ended questions, in keeping with the constructivist approach to grounded theory (Charmaz, 2006). These initial questions were designed to explore the topic of employment, but were broad enough to avoid forcing the data. An example of such a question is, “Can you tell me about your work/study/how you spent your day prior to the February 22nd earthquake?” With further prompts to elicit information on the process and influences on the RTW. As the project progressed, the interview schedules were adapted to explore ideas from the analysis of earlier interviews using the constant comparative method of grounded theory. Examples of the first-year interview questions can be found in Appendix E with second-year interview schedules developed to include questions to enable data saturation, as outlined in Appendix F.

Vocational ACC participants were only interviewed once, in 2013 (Table 5.5).
Table 5.4 Professional participants’ interview schedule

<table>
<thead>
<tr>
<th>Professional Participant</th>
<th>Interview date</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Vocational Professional</td>
<td>25/03/2013</td>
</tr>
<tr>
<td>B Vocational Professional</td>
<td>29/05/2013</td>
</tr>
<tr>
<td>C Vocational Professional</td>
<td>10/06/2013</td>
</tr>
<tr>
<td>D ACC</td>
<td>20/06/2013</td>
</tr>
<tr>
<td>E Vocational Professional</td>
<td>26/06/2013</td>
</tr>
<tr>
<td>F ACC</td>
<td>28/06/2013</td>
</tr>
<tr>
<td>G Vocational Professional</td>
<td>18/07/2013</td>
</tr>
<tr>
<td>H Vocational Professional</td>
<td>23/07/2013</td>
</tr>
<tr>
<td>I ACC</td>
<td>25/07/2013</td>
</tr>
<tr>
<td>J ACC</td>
<td>4/09/2013</td>
</tr>
<tr>
<td>K ACC</td>
<td>26/09/2013</td>
</tr>
<tr>
<td>L ACC</td>
<td>8/10/2013</td>
</tr>
</tbody>
</table>

However, a second interview was completed for Participant A to follow up on some of the concepts that required clarity from the first interview. The interviews took place at a location chosen by the participants. The majority of interviews for the injured survivors took place in the participant’s homes; one participant was interviewed at the Allan Bean Centre on the Burwood hospital site, and two participants were interviewed at their workplace outside their normal working hours. Separate interview schedules were devised for each group of professional participants (Appendix G and H). These interview schedules were developed from the analysis of the injured participant’s initial interviews to develop the emerging categories. Demographic information, including years of experience and professional background, was collected at the end of the interview. Following all the interviews observations and initial reactions to the interview were recorded and documented in a journal.

All participants from ACC chose to be interviewed at the ACC office in Christchurch, with the exception of one interview of a higher level manager based in Wellington, which was completed over the phone. The vocational professionals were interviewed at work (n=3); in their own home (n=2); or at a café (n=1). Most interviews lasted around an hour but ranged from 30 minutes to three hours.
5.4.1 Interviews

All interviews were digitally recorded and stored on a password-protected computer. The recordings were transcribed verbatim by a professional transcriber, who signed a confidentiality agreement. To maintain anonymity names of people, such as colleagues, and employers/employees, were replaced with a name chosen sequentially from a list of random male and female names. Where participants made additional comments after the recording finished, a summary of these comments was added as field notes by the researcher. To protect the identity of the participants, pseudonyms were assigned for the injured earthquake survivors, these being chosen by the participants themselves or taken from a random name list at their request. ACC staff and vocational professionals were allocated letters with their status in brackets for clarity, e.g. participant A (Vocational professional).

Once the transcripts were completed and I had checked them for accuracy they were returned to the participants for feedback and to allow any changes to be made. Four participants made changes, these included further clarification of facts; one participant included more details about the emergency response at their workplace, while another participant requested information which potentially identified third parties be removed before analysis. In these cases the altered transcripts were used for analysis.

Data collection continued until “theoretical sufficiency”, as suggested by Dey (1999, p. 257) was achieved, when I felt no new information was forthcoming and the categories were complete (Bluff, 2005). I considered theoretical “saturation” (Bluff, 2005) to be an idealistic concept whereby practical limitations may well prevent the achievement of saturation (for example, availability of appropriate participants, time restrictions and funding limitations). As such - one can never know for sure what the next interview might uncover. In this study the decision on when theoretical sufficiency was achieved was reached in conjunction with the supervisory team through regular meetings and discussion, and was achieved after a total of 32 hours of interviews. Other strategies to ensure rigour are described in Section 5.7.

5.4.1.1 Managing distress and ethical considerations

It was anticipated the interviews could evoke negative emotional responses, such as sadness or anger from discussing the traumatic events of the earthquake. To minimise any possible distress participants were advised that they could stop the interview at any
time or decline to answer any of the questions. Participants were able to have a support person present during the interview and information of health and disability advocates were provided on the study information sheet each participant received.

As mentioned previously, as I had an existing therapist/patient relationship with some of the potential participants, independent recruiters made the initial approach to all the injured earthquake participants to reduce any pressure to participate on the participants I knew.

ACC staff and vocational practitioners are bound by the ACC code of conduct (Accident Compensation Corporation, 2014) in addition to any profession-specific guidelines which require them to maintain client confidentiality. Care was taken to ask general questions about people injured in the earthquake as a group and not focus on specific individuals. ACC and vocational practitioners did not disclose the identity of their clients; however, descriptions of events discussed with one person were often retold by other people involved; therefore, on occasion, I inadvertently knew who they were talking about. The earthquake survivors were not bound by confidentiality and often talked about their vocational practitioners and ACC case managers by name. Because of the small numbers of seriously injured earthquake survivors, and the media interest in the topic, steps were taken to maintain anonymity of all the participants. All possible identifying information was removed from the transcripts, pseudonyms were given to the participants and the specific injuries of injured participants were not disclosed.

5.4.1.2 Māori Consultation
In keeping with the Treaty of Waitangi Māori consultation took place through the Research Manager-Māori at the Research Office of the University of Otago. Māori are acknowledged to have worse health outcomes compared to NZ Europeans. An audit of multi-trauma patients admitted to Christchurch Hospital over a three-year period showed 10% of patients identified as Māori, so a similar representation was anticipated from the Christchurch earthquake. Following recommendations from the research department ethnicity data was collected using the census ethnicity questions. However, the RHISE database only identified three people admitted to Christchurch hospital who identified as Māori. None of them were recorded as employed or had serious injuries, thus did not meet the criteria for purposive sampling.


5.5 Producing the grounded theory

This study followed the grounded theory methods influenced by Charmaz (Charmaz, 2006); with data collection and analysis taking place concurrently. On occasions, the initial coding of an interview could not be completed immediately after an interview as some interviews were scheduled in quick succession to accommodate the availability of the participants. In these cases a brief analysis was completed from the interview recordings; this ensured a constant comparative analysis so interview schedules were adapted to reflect my current theoretical thinking.

When I commenced the coding using initial coding, I started by reading the whole interview and then coded it line by line, so each line, or each short passage of data, was broken down, analysed and then labelled succinctly to describe the content (Charmaz, 2006). An example of the coding can be found in Appendix I.

I used NVivo (Version 9.0) software program for data storage and management. Although there is some debate over the use of computer software during analysis (Charmaz, 2006; Corbin & Strauss, 2008), it is important to note that this system does not take away the analytic choices and interpretation of the research rather it: “enhances the ability of the researcher to search for, store, sort and retrieve materials” (Corbin & Strauss, 2008, p. xi). NVivo® was also used to maintain an audit trail (Corbin & Strauss, 2008) by providing a recording of the different coding structures as they were developed through to the final categories and theory, and the progression of memos and journaling that occurred throughout the research.

All the coding was done using NVivo®, but on reviewing the early attempts of coding, and in supervisory discussion, I became concerned my coding was too superficial as I found myself coding blocks of information, as I had done previously in Interpretative Phenomenological Analysis studies. I therefore re-coded these interviews by hand and compared the outcomes with the NVivo® codes. There was a general consistency between the generated codes, but some amendments were made to the coding of the first four interviews in order to incorporate new ideas generated from the re-coding as informed by the constant comparison process which occurred as I re-coded the interviews. As the analytical coding continued more abstract codes emerged, helped by the process of memoing, the ideas and thoughts from the interviews and initial codes and discussions with the supervisory team.
The next stage of coding in constructivist grounded theory is focused coding (Charmaz, 2014) where the most significant early codes were determined and further developed and refined into categories. In this intermediate stage codes were refined into categories and its properties are explained to, “specify the conditions under which it arises, how it is maintained and changes; describe the consequences [of the category] and begin to determine how this category relates to other categories” (Charmaz, 1995, p. 40). I drew on the information from the initial codes forming focused codes ensuring these were gerunds, to maintain the action in the code; for example, maintaining balance, rather than just balance. With each new interview I compared the codes generated with those already collected, questioning their similarities and differences.

The final, and highest, level of coding in constructivist grounded theory is theoretical coding (Charmaz, 2001; Urquhart, C., 2013), where further interpretation and abstraction of the data are used to conceptualise how the codes relate, and to define the relationships between the codes, which brings the story back and conveys theoretical direction to the data. The focused codes in this study were the platform for building the categories (a coding example is found in Appendix I). Establishing these categories was aided by memoing, refocusing the interview questions to achieve saturation of the categories and crystallising the integration of the categories. Four distinct categories were identified, rather than the core category used in other grounded theory perspectives (Birks & Mills, 2011). An integrative theory diagram was formed from the four categories. Throughout the process from early on I wrote memos (with the initial codes) and continued to write memos on emerging ideas. Initially, these memos were descriptive, recording ideas from the data, questioning codes and ideas, driving new questions. With time and experience they became more conceptual and documented the development of categories. I used them to describe areas that were missing in the categories and the information I would need to saturate them. I also made tentative links between the categories and undertook a progression of diagrammatic interpretations of the model until I had the form that is presented in the results. During the process of writing up, I used the categories and their proposed relationships as expressed and considered in memos to be the basis of theory until it reached its final appearance.

I undertook member checking (Murphy, Dingwall, Greatbatch, Parker, & Watson, 1998) as an additional way of measuring theoretical sufficiency and presented the final
theory to a number of the participants to see if it held true to them. These recorded interactions were part of the analysis and findings presented in subsequent chapters.

5.6 Rigour of the study

There are a number of perspectives on achieving rigour in qualitative research (Murphy, et al., 1998). Due to the wide range of methodologies and theoretical frameworks applied to qualitative research there is no agreed consensus on a definitive method to substantiate rigour (Creswell, 2013). Although the constructivist underpinning of this study accepts that multiple interpretations of the outcome are inevitable it is important to establish that the process of the research has been followed appropriately within the grounded theory methodology. For this study I applied the three components of rigour for qualitative research, as described by Meadows and Morse (2001): verification, validation and validity. These three simple criteria cover the important aspects of quality in qualitative research and were used in conjunction with the specific grounded theory measurements of rigour. Validation and validity are used in some areas interchangeably but are subtly different.

Verification strategies are internal to the research. These include: an appropriate design, which is consistent with the underlying philosophy, with methodological coherence and appropriate sampling techniques. This information must be made explicit in the research. In this study the methodological coherence is with the constructivist grounded theory, and the philosophical and prior knowledge of the researcher has been stated. Constructivist grounded theory was chosen as it acknowledges the previous knowledge of the researcher. The study used purposive and then theoretical sampling strategies consistent with this methodology.

Validation can be applied to qualitative research through illustrating the truth of the data and the replicability of coding, this may be achieved by check-coding by another researcher, member checks with research participants are an opportunity to share opinions and clarify data; however, a member check does not necessarily outweigh the expertise of the researcher/analyst. In this study transcripts were sent to the supervisors who read the transcripts and the codes and we then had a group discussion about the results. It is acknowledged that because of the constructivist nature of the research different researchers are likely to find different perspectives and a collective agreement of the truth is not necessary (Sale, 2008). However, this provided opportunity to
consider other possible interpretations of the data, igniting discussion which, in turn, provided insights into refining coding frames, as advocated by Barbour (2001). Member checks also validate the analysis of the researcher by asking those involved in the research to assess the adequacy of the analysis (Murphy, et al., 1998). This process allows any errors in the analysis to be identified; it is also a method of collecting additional information. Caution was taken with member checking as the research participants are not necessarily unbiased assessors and bring their own agendas with them (Bloor, 1983).

Another aspect of validation is the audit trail, the documented trail of the research process, including methodological decisions and analytical choices made by the researcher. In this study, memos were used alongside field notes and a journal to accurately document the methodology, sampling and analysis and any changes as they happened. This formed an audit trail of the study.

Validity in a qualitative project relates to the outcome of the study. It is the trustworthiness of the project as judged by those external to the project. It is related to the adherence to the validation processes throughout the project. Validity relates to how ‘real’ the findings are (Meadows & Morse, 2001).

In addition, grounded theory has its own ‘methodology-specific’ measures of rigour. Charmaz (2006) describes four criteria to assess the quality of grounded theory; credibility, originality, resonance and usefulness. Credibility relates to the adequacy of the research process. This is achieved through generating data that are able to substantiate the claims made in the research, demonstrating strong links between the collected data and the analysis and argument of the research. These links should be adequate for the reader to independently reach the same conclusions from the data provided by the researcher. The originality of the research is judged through the significance of the research socially and theoretically; how insightful the research is and whether the research challenges current ideas and concepts. Resonance looks at how accurate the research is, and how well it reflects the data. Whether it makes sense to the research participants’ or others in similar circumstances, and whether further understanding of their worlds has been gained through the research. The final criteria is usefulness, which looks at how the work contributes to knowledge. It assesses if the research links to other substantive theories or would influence further research and
whether the analysis can be used in the everyday world (Charmaz, 2006). These measures of rigour will be discussed in relation to this project in Section 9.6 in the discussion.

5.7 Summary

This chapter described the rationale behind the choice of constructivist grounded theory. First, the philosophical background to the study was detailed determining the relativist epistemology and constructivist epistemology underpinning this study. Secondly, the choice of constructivist grounded theory influenced by Charmaz (Birks & Mills, 2011; Charmaz, 2006) was justified. This methodology was chosen for its congruence with the purpose of this research to investigate the return to employment or productivity after the February 22nd Christchurch earthquake, a social process within the NZ context. Thirdly, the collection of data was discussed, including the methods and ethical considerations of the study. The final section of this chapter described the analytic process used to generate the grounded theory. The findings and theory derived from this research are detailed in the following three chapters.
6 Overview of results and introduction to the theory

The next three chapters present the findings of this study which culminated with a substantive explanatory model of returning to work with an earthquake injury. The results begin with a description of the participants’ characteristics. The overview of the categories and an introduction to the theory will then be presented. Words or phrases presented in italics indicate categories, subcategories or codes identified from the data. This theory comprises four linked categories:

- Rebuilding normality;
- Negotiating the return to work journey;
- Operating within the system; and
- The Earthquake experience.

Chapter 7 presents a detailed exploration of the four categories, with illustrative quotations from the interviews. Chapter 8 presents the theory, the model, and an explanation of the integration of the categories within the model.

6.1 Participant characteristics

A total of 26 participants provided written consent for this study; 14 injured earthquake survivors, six vocational professionals and six ACC employees.

6.1.1 Injured participants

Twenty-nine injured participants were approached to take part in this study. Two participants declined because they were too busy due to work commitments. Two participants declined as they felt unable to cope discussing the earthquake. Two participants had moved overseas and nine potential participants did not respond to follow up calls, or were not able to be contacted.

A total of 14 participants were recruited and completed the first interview between 16 and 24 months after injury (Table 5.4). The second interview was completed a year later (mean 11.9 months SD=1.24). Two participants did not complete the second interview; one participant withdrew, and another did not respond to efforts made to
contact them. To preserve the anonymity of the small and distinct group of participants, their characteristics are presented in Table 6.1 as grouped data.

<table>
<thead>
<tr>
<th>Demographics</th>
<th>N=14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age at injury (years)</td>
<td>48</td>
</tr>
<tr>
<td>Range (years)</td>
<td>23-72</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>New Zealand European</td>
<td>14</td>
</tr>
<tr>
<td>Māori</td>
<td>0</td>
</tr>
<tr>
<td><strong>Injuries</strong></td>
<td></td>
</tr>
<tr>
<td>Orthopaedic injuries</td>
<td>7</td>
</tr>
<tr>
<td>Spinal cord injury</td>
<td>4</td>
</tr>
<tr>
<td>Lower limb amputation</td>
<td>2</td>
</tr>
<tr>
<td>Traumatic brain injury</td>
<td>1</td>
</tr>
<tr>
<td><strong>Mobility status</strong></td>
<td></td>
</tr>
<tr>
<td>No aids required</td>
<td>8</td>
</tr>
<tr>
<td>Wheelchair dependent</td>
<td>5</td>
</tr>
<tr>
<td>Mobility aid</td>
<td>1</td>
</tr>
<tr>
<td><strong>Place of injury</strong></td>
<td></td>
</tr>
<tr>
<td>Injured at work</td>
<td>7</td>
</tr>
<tr>
<td>Injured at home</td>
<td>3</td>
</tr>
<tr>
<td>Injured elsewhere</td>
<td>4</td>
</tr>
<tr>
<td><strong>Pre-earthquake work status</strong></td>
<td></td>
</tr>
<tr>
<td>Paid employment</td>
<td>11</td>
</tr>
<tr>
<td>Non-paid productive role</td>
<td>2</td>
</tr>
<tr>
<td>Retired</td>
<td>1</td>
</tr>
<tr>
<td><strong>Workplace damage</strong></td>
<td></td>
</tr>
<tr>
<td>High - death of employee, injured employees and building damage</td>
<td>5</td>
</tr>
<tr>
<td>Moderate - injured employees and building damage</td>
<td>4</td>
</tr>
<tr>
<td>Low - employees injured but not in work situation and building damage</td>
<td>2</td>
</tr>
<tr>
<td>N/A</td>
<td>3</td>
</tr>
</tbody>
</table>
6.1.2 Vocational and ACC participants

Vocational participants came from both clinical and employment backgrounds, while the ACC participants included case managers, support coordinators and managers. The majority in both these groups were women (Table 6.2).

Table 6.2 Characteristics of the professional participants

<table>
<thead>
<tr>
<th></th>
<th>ACC Participants</th>
<th>Vocational Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td>Men = 1</td>
<td>Men = 2</td>
</tr>
<tr>
<td></td>
<td>Women= 5</td>
<td>Women = 4</td>
</tr>
<tr>
<td><strong>Mean Age (years)</strong></td>
<td>42</td>
<td>49</td>
</tr>
<tr>
<td><strong>Range (years)</strong></td>
<td>35-55</td>
<td>34-70</td>
</tr>
<tr>
<td><strong>Role/profession</strong></td>
<td>Included:</td>
<td>Included:</td>
</tr>
<tr>
<td></td>
<td>support coordinators, case</td>
<td></td>
</tr>
<tr>
<td></td>
<td>managers, triage manager,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>national and service level</td>
<td></td>
</tr>
<tr>
<td></td>
<td>management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>physiotherapists,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>vocational professionals,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>doctor</td>
<td></td>
</tr>
</tbody>
</table>

6.2 A theory of return to work following an earthquake injury

Within the context of this study, work was considered in its broadest form (Section 3.5). This theory aims to provide an understanding of RTW following an earthquake injury. It comprises four interlinked categories: Rebuilding normality – depicting the broader goal or outcome of RTW, Negotiating the RTW journey - the process taken to achieve RTW, Operating within the system- describes the RTW system within a NZ setting and finally, the Earthquake experience- explains the specific impact from the earthquake. The categories reflect RTW perceptions of different stakeholders within the context of the earthquake affected city of Christchurch.

6.2.1 The outcome – Rebuilding normality

For all the injured participants, the goal to returning to normal was of high importance. ‘Normal’ or ‘normality’ was used by the participants to describe their ideal outcome, but this had multiple meanings. In rehabilitation settings, words like normal are commonly used in assessment and measurement; however, the focus is often on resolving disability and maximising function rather than returning to pre-injury status. The injured participants had individual interpretations of what constituted normality, but for most of the participants ‘normality’ was used to describe who they were and what their life was like before the earthquake. The perception of normality incorporated
a temporal component where normality was slowly rebuilt from a historical perspective to a focus on the present.

Initially, there was a physical focus of rebuilding normality, starting with maximising recovery and rebuilding a normal physical self. The participants perceived that physical recovery would facilitate a return to their pre-earthquake roles, including family roles.

An additional environmental component to normality was evident for the injured participants, as they also wanted their physical surroundings to return to normal, to somehow erase the earthquake damage to their homes and their city. The participants physical efforts to return to normal mirrored the rebuilding of the city of Christchurch, thus, the category name reflects the term which became recognised across NZ to describe the plans to repair the earthquake damage to the city: ‘The Christchurch rebuild’.

Work appeared to be an integral part of a normal life and participants saw RTW as a building block – a step towards the goal of rebuilding normality. However, there were differences in the perceptions of the role of RTW between the injured participants, ACC and the vocational participants. While, for the injured participants, it was a building block to normality, it appeared the main goal for ACC and the vocational participants.

6.2.2 The process – Negotiating the return to work journey

The RTW process was described by all the participant groups as a journey. In this context both the physical and discursive meaning of negotiating are incorporated to describe working through the physical aspect of the RTW as well as the discussions/relationships with the other stakeholders along the journey.

The injured participants engaged in the RTW process within multiple contexts of a changed environment because of the earthquake. Each participant’s journey was unique but for those who had returned to work it entailed the same stages: (1) planning and preparing for RTW; (2) achieving work; and (3) maintaining work. Participants did not necessarily progress consecutively through each stage, and some people had to return to an earlier stage before finally completing the process. The process was influenced by the individual characteristics and the specific contextual factors of the person. This also included the perception of others and comparison to other people. Other injured
earthquake survivors acted as role models and provided a benchmark for the speed and equity of RTW.

6.2.3 The system - Operating within the system

Injured participants negotiated their RTW journey within the ACC system. This system followed a set process which determined what was ‘achievable’ within the expectations of RTW. This was verified by assessments from independent medical experts and this became the platform for all RTW decisions. These decisions were made within a hierarchical management structure built into the system. The highest level of justification within the hierarchy was the ACC legislation. Assessments, treatments and service delivery were externally contracted to accredited experts, with no single contractor given significant/overall power. The contractor was often torn between, what in effect were two clients, and needed to balance the often conflicting goals of injured clients with their contractual obligations to ACC. ACC’s ability to evolve and encompass the changing demands of rehabilitation appeared constrained by the rigid structure and the legislation underpinning the system. The ACC system dominated the RTW process. The system seemed to have limited capacity to change and adapt to individual clients’ goals and expectations, especially if they were outside the provisions of the system. This rigid structure was not changed for the injured earthquake survivors and so appeared unable to accommodate the personal and environmental factors resulting from the earthquake.

The RTW trajectory for the injured participants was, in many ways, determined by ACC and appeared to be largely influenced by the individual’s injury. The RTW journey appeared more complicated if the injured participant’s own perception of the RTW process did not align with that of ACC.

The vocational providers contributed a unique component to the system. Although they operated within the system, they were not necessarily considered part of it by all the injured participants. The vocational providers were contracted by ACC to facilitate timely RTW for the injured earthquake survivors and, essentially, worked between the system (ACC) and the process of RTW (injured participants) by managing the conflicting goals to achieve RTW.
6.2.4 The earthquake experience

The earthquake experience describes the specific impacts of the earthquake on the RTW experience. The greatest and most direct impact of the earthquake was described in the first year, starting on the date of the earthquake that caused the injuries to the participants. The earthquake experience re-occurred through the RTW journey, like the ongoing aftershocks, and influenced all aspects of RTW for the duration of the study. The impact of the earthquake changed over time. The indirect influence of the earthquake was apparent in the shared experience of the earthquake and this caused increased empathy, or survivor guilt, towards the injured participants. The increased empathy was shown by health professionals, vocational professionals and ACC employees as well as from employers and co-workers. This increased empathy appeared to improve the flexibility of RTW for the injured participants. There were also impacts on the support systems and the environment of the injured earthquake survivors because of the earthquake.

This chapter has briefly outlined the four categories contained in the theory of RTW with an earthquake injury. The next chapter explores each category in detail, and then the interactions of the categories are described in detail in Chapter 8.
7 Findings - the categories

This chapter provides a detailed account of the findings from the interviews which formed the four key categories and the subcategories which impacted the RTW of the injured participants. The term injured earthquake survivors is used to refer to the larger population of injured earthquake survivors beyond the injured participants in this study, while injured participants refers to those injured earthquake survivors recruited for this study. The results are presented using a narrative approach and include illustrative quotes from the interviews. Any additional information provided within the quotes is added within brackets ( ) and three dots … are used where information has been removed. A number of measures have been taken to protect the anonymity of the participants. First, alterations to the quotes to remove potentially identifying information are presented within parentheses, [ ], secondly, self-selected pseudonyms are used for the injured participants; the quotes are labelled as 1 or 2 to indicate which interview the quote came from. The professional participants are labelled alphabetically, followed by an organisational identifier; either ACC or vocational. Finally, because of the small group of injured participants the specific injuries are not routinely provided with the quotes. Where this would add relevance to the quote descriptors, the injury severity and mobility status are included. As noted on page 99, the four key categories are:

1. Rebuilding normality;

2. Negotiating the return to work journey;

3. Operating within the system, and

4. The Earthquake experience.

Each will be discussed in turn.

7.1 Rebuilding normality

Rebuilding normality describes the injured participants’ goal to, “lead a normal life again” and get back to their pre-injury lives, hopeful that everything would return to what it was like before the earthquake. Polly (Interview 2) summed this up: “yeah, I just want to be normal. I want to get in the car and just pick someone up after work or do something, help out in the family and do things.” The injured participants described
building up physical, emotional, occupational and environmental components of normality. Work transects a number of those components and was used as a building block to assist in re-establishing identity, status and a social physical environment to provide the feeling of normality as the injured survivors strived to rebuild their lives. For the injured participants, normality did not appear to be a static goal; rather, they constantly rebuilt their perception of normality.

There are three subcategories of rebuilding normality (each with further sub-levels of detail and nuance): 1) the steps of recovery; 2) using work as a building block; and 3) getting on with life. Each of these will be discussed separately.

7.1.1 The steps of recovery
The injured participants considered the process of recovery to be the foundation of rebuilding normality. They identified three distinct types of recovery: physical recovery, psychological/emotional recovery and getting on with life. These had complex interactions. Although the injured participants were aware of all three types of recovery to some degree from the time of injury, they described key tipping points where a particular step of recovery came into sharp focus and held their whole attention. Physical recovery was the initial focus, and this was initially considered as the most important aspect of rebuilding normality. The second step to come into focus was psychological/emotional recovery, and the major work of this step of recovery started after physical recovery. The final step or change of focus was described as getting on with life – getting back to normal. The injured participants appeared to use work as a building block to progress to this final step of recovery. Generally, all participants described the same progression through their recovery, although the time when the focus changed to the next step of recovery differed, and participants appeared to spend different lengths of time focused on each step.

7.1.1.1 Physical recovery
The focus on physical recovery was perceived to start immediately after injury. Initially, this was hospital-based, and then progressed to community-based rehabilitation once the injured participants were discharged from the hospital. Once community rehabilitation had finished most of the seriously injured participants continued to exercise as a form of maintenance. The focus on physical recovery varied across the injured participants and, to some extent, was dependent on the severity of
injury they sustained. Those with more serious injuries (Evelyn, Nicola, Jim, Polly, Susan, Taylor and Alexis) spent longer focused primarily on physical recovery because of their length of hospitalisation - many of them were hospitalised for six months or more. Consequently, for these participants the first year after the earthquake was mainly focused on physical recovery.

Most injured participants described receiving a predicted recovery date from medical staff during their rehabilitation. For participants with neurological injury, the predicted time frame for recovery was two years after injury (either because they had been advised of this or had somehow come to expect this) and many appeared to interpret this as the date they would return to normality, rather than achieve maximum recovery. Some injured participants were disappointed when the two-year window of recovery came and went without the much longed for return to normal, and the reality of their injuries set in. Nicola (Interview 2) recalled:

_You think at the start that you’re bulletproof but I think if you’re ever talking to anybody, you can only emphasise the two-year down. You know, when you suddenly get two years and that real crash of feeling and I think a lot of us felt exactly the same at two years. It was, “Oh my god. Things are not going to get better. This is it.”_

The two-year mark appeared to coincide with the end of the therapy intervention for physical recovery, and most of the injured participants felt they were then left to continue rehabilitation on their own; often a double blow to their hopes of physical recovery. Consequently, the second and third years after the earthquake were considered harder by many injured participants as the reality of their physical impairments hit and were compounded by Christchurch still being in turmoil (Section 7.1.3).

Having less serious injuries appeared to be associated with a faster physical recovery, and these participants described a faster progression through the first step of recovery. These participants appeared to be closer to reaching normality by the end of the first year and, consequently, by the second year were more likely to be ‘getting on with it.’

The early focus on physical recovery appeared to defer a key step in emotional recovery – recognising it – almost as if the injured participants could not focus past their physical recovery, Peggy (Interview 1) described: “_the first year since the earthquake, was physical recovery and that was the priority although I was aware that there was psychological trauma underpinning that._”
7.1.1.2 Emotional recovery

As the injured participants’ focus turned to emotional recovery the importance of physical recovery appeared to decline, but did not stop. The injured participants described two components of emotional recovery: recovery from the injury and recovery from the earthquake experience. The injured participants demonstrated different levels of emotional recovery. Almost all of them were offered psychological support to assist with their earthquake-related trauma during their hospital stay, and only Lillian and Julia (who had less serious injuries and were injured through falls at home) were not. However, at the time psychological assistance was offered the injured participants described their priority and focus was physical recovery and so not all of them accepted the psychological intervention. In fact, the emotional effects of the earthquake took many of the injured participants by surprise; Peggy (Interview 1) explained her experience:

*I had all the physical injuries which, in some ways I think for the first six months anyway, kind of overrode the psychological trauma and so the worst of the psychological stuff came in and sort of ambushed me out of left field really six months later when I couldn’t sleep and I was incredibly jittery and would jump at the slightest thing. Ah, quite a lot of sort of neurological things happening. I was getting flashing lights, hot and cold, hot and cold flushes and nausea and just everything. All those symptoms came in later.*

Peggy was injured when the building she worked in collapsed. Ironically, her work before the earthquake involved dealing with people with issues from the September earthquake. Although Peggy (Interview 1) planned to RTW the psychological impact of the earthquake was such that at a memorial service for the earthquake on February 22nd 2012 she decided: “I actually can’t do this job anymore. And I knew I couldn’t. I kind of had known I couldn’t because my own (psychological) responses were going to be triggered so easily” So she made the decision, “right there and then” to retire.

The psychological impact was not just a consequence of the Christchurch earthquake, but also from the thousands of aftershocks. These took their toll on the injured earthquake survivors. Even at the second interview, which was nearly three years following the earthquake, many of them reported varying degrees of ongoing symptoms from issues with sleep to avoidance of places they felt were unsafe. Hailey (Interview 2) was injured in her workplace. She described her difficulty sleeping: “I’m asleep and the next minute I’m screaming and it’s dark and I’m trying to escape and I’m assuming
that’s from that [the earthquake]. Yeah. And I end up, I’m not in bed anymore, I’m out the door.”

Hailey and Samantha had less serious injuries, but reported ongoing psychological symptoms. They were unsure where to find help for their emotional needs as contact with health and social services, who had helped with psychological assistance after the injury, stopped when they achieved full time RTW. Consequently, they felt they had to find their own support.

Emotional recovery appeared to involve reconciling the past and present identity, a process of merging “Who I used to be” with “Who I am now.” Many of the injured participants felt unable to recognise the value of their present life as they were unable to associate having a disability with being normal. This was most evident in the wheelchair users with a visible disability. Evelyn (Interview 1) described:

_The bigger issue is just coming to terms with the level of injury and that’s been really hard, and I don’t think I’m still, I’m not accepting of it and just not to the position where it just feels all right I’ll get on with life that’s still really horrible, and annoys me, and upsets me and, you know, just frustrating_

The movement through these steps to recovery were highlighted in the content of interviews at both time points. In the first interview, injured participants talked in detail about their injuries and their ongoing rehabilitation which, for some, appeared a cathartic process. Susan reported the interview was the first time she had talked about her experience in detail to someone outside her social network. For others it was a well-told story, Polly (Interview 1) even apologised: “yeah, I might sound a bit rote because I’ve kind of said it enough.”

Although the injured participants did not explicitly say during the interviews, it appeared that while they were focused on physical recovery, they were less focused on work. As they became more confident their physical recovery was coming to an end, they reached a tipping point and their focus shifted. Emotional recovery was the second step of recovery and was often less visible to others. RTW appeared to be one way the injured participants could start to reconcile their past and present identity, regain the normality associated with their old life and reinforce they were still the same person they were before the earthquake.
7.1.1.3 Stuck – waiting for life to kick in

Some injured participants, particularly the wheelchair users, described feeling “stuck” (Evelyn Interview 1). Physically stuck in a wheelchair, or with their disability, and mentally-stuck, coming to terms with the impact of the earthquake, or stuck in the past. Polly (Interview 1) described it as being, “on the outside looking in at the moment, waiting for life to kick in.”

Being stuck appeared to be related to how the injured participants were coping after the earthquake. Sebastian (Interview 2) proposed three distinct patterns of coping after the earthquake within his workplace that had high impact damage. He identified:

People who just clammed up, didn’t talk about it and just carried on like nothing had happened. You had some that recognised it had happened and that it was bad and bad stuff had happened but they were moving on. And then you had some who were stuck there still with the “poor me’s.”

He saw himself as one of the middle group who were moving on, and partially attributed his ability to move on to the less serious consequences of his injuries.

They’re wheelchair dependent survivors] going to always be at that level and they’ll always have ongoing issues so, yeah, I can see a light but theirs is just, “This is how it is.” Sebastian (Interview 2)

It appeared that being stuck went beyond being physically stuck and the participants were also metaphorically stuck in an injured frame of mind, unable to see a positive future for themselves and wishing they were still the person they were before the earthquake.

Although none of the injured participants explicitly described how they moved on from ‘being stuck’ it appeared to be a decision to take control and move on and actively strive to rebuild normality. Work appeared to help create the momentum to move forward with their lives and reach the final stage of recovery so, for some, work was a building block in this process.

7.1.2 Work as a building block

For most of the participants work acted as a building block to the new normal, the final stage of recovery. For the injured participants employed at the time of the earthquake work constituted, to a greater or lesser extent, one aspect of normal life.
“I guess for me, I always just wanted to get back to normal. So that meant getting back to work because I was never a stay at home kind of person.” Alexis (Interview 1)

They described work as one area of their life they felt they could control, and so RTW was a way to gain back control and their pre-injury status, defining who they were.

So, everything about my life, before I was responsible for, I worked for people I had, you know, tasks that had to be completed, responsibilities, and now it’s just, it just, feels completely opened up, ummm. So, from a work perspective, that’s just probably the work perspective there, it takes away all the control I had, and trying to gain little bits of that back is what I’m aiming to do. Evelyn (Interview 1)

This attempt to gain control was also noticed by the vocational practitioners, participant G (Vocational) commented:

That was their main focus, was just get back to work, want something normal, want control of something ... It was really, really important for them to get back as soon as they could and back to as normal as they could in the work sense.

The process of RTW progressed alongside the steps of recovery. Although the injured participants employed at the time of their injury returned to work following discharge from hospital, they described returning initially in a limited capacity due to the ongoing therapy/rehabilitation.

In order to facilitate RTW the injured participants spoke of identifying and establishing different ways of working due to their injury. Some felt this process was a precursor to other components of their lives, such as returning to social situations, which required the same reframing process. In addition, RTW seemed to help the injured participants establish a routine; moving them closer to normal by creating a synergistic overlap between a normal routine and a normal life.

Work was a tangible piece of normality for the injured participants, but it was also perceived to be a key focus for ACC input, promoting early RTW and providing good RTW support. So, although many of the injured participants wanted to RTW and chose a RTW pathway, the timing and process of the RTW for the people who were in paid employment at the time of their injury was pre-determined and facilitated by ACC. This meant work was not such an effective building block to the final stage of normality. Polly, Lillian and Julia, who were not in paid employment at the time of their injury, believed they received less assistance from ACC than those in paid employment; they were not eligible for weekly compensation and so felt they did not receive the physical
or financial assistance to achieve what they considered their work goals, such as homemaking or caring, that the injured participants received through vocational assistance. Polly (Interview 2) explained:

...the other side of the coin, which is the rehabilitation socially, there’s been absolutely no support. You’ve had to go and find your own sort of way of coping and dealing with things and I think the way ACC is geared, if I was working, or they were wanting to get me back into my old job, there would be a lot more contact with ACC. And as it was, mine just dropped off completely.

Lillian described not approaching ACC for assistance caring for her husband after her injury. She was convinced they would not provide any help so, instead, sought help from family members. Julia, who sustained a non-serious injury and was not working at the time of the injury, had no contact with ACC at all.

7.1.2.1 Other reasons to work

While RTW was an important goal for the injured participants, it was not the only goal. In addition to the normality of work the injured participants identified a range of reasons to RTW (Table 7.1). These contextualised the importance of work within the greater aim of rebuilding normality. When asked why they wanted to RTW some participants identified multiple reasons; while others cited the lack of these reasons for why they were not working. The younger females, Susan and Taylor, both had administrative jobs prior to the earthquake and described the reason to RTW work as, “Something to do.” Taylor explained she had enjoyed the people she worked with but not particularly the job.

Other reasons to RTW were related to re-establishing a sense of identity, how the person defined themselves; in other words, their sense of self. Across the injured participants’ interviews there appeared to be an integral link between work, identity and recovery. Immediately after the injury, participants described lacking awareness of the impact and severity of their injury - being in a state of denial.
Table 7.1 Participants’ reasons for returning to work

<table>
<thead>
<tr>
<th>Reason for RTW</th>
<th>Example</th>
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<tr>
<td>Social connection</td>
<td>“And what I didn’t realise was that an injury of my type, how quickly you can fall off the radar socially. It’s ... you can be too sore to go out, it’s too difficult to spend all that time getting ready, and before you know it, you can be a recluse at home and have no outings. And that’s where work, socially, has been a big thing, it’s been huge.” Jim (Interview 1)</td>
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<td></td>
<td>“The social aspect of that, getting into a completely different group again and meeting up with the others and being part of a team again, which is probably what I miss most about going to work.” Peggy (Interview 2)</td>
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<td></td>
<td>“It gives me the ability to interact with people.” Evelyn (Interview 1)</td>
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<td></td>
<td>“I just - I enjoy getting out, getting dressed, putting some make-up on, making sure - I think I look all right. Meeting people, talking to people.” Hailey (Interview 1)</td>
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<td>Having purpose and something to do</td>
<td>“So I don’t have a timeframe and I’ve told them as well that my days are so full, I wouldn’t have time. It’s when I start getting to the point of, ‘I’ve got nothing else to do, I’m bored, ‘You know, that’s when I might be able to start getting into it slowly.” Taylor (Interview 1)</td>
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<td></td>
<td>“Yeah, I was really over being at home because it’s really not that fun. There’s only so much stuff you can do. I don’t know how people could, actually, enjoy staying at home, not having a job at all. - So, yeah, I was just like, ‘No, I want to go back to work.’” Susan (Interview 1)</td>
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<td>Job satisfaction</td>
<td>“Yeah, is important. I love what I’m doing.” Alexis (Interview 1)</td>
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<td></td>
<td>“I enjoy work. It’s like another appointment, that right, we get up, we go to it. And I really enjoy it.” Jim (Interview 1)</td>
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<td></td>
<td>“Because I love it.” Nicola (Interview 1)</td>
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<tr>
<td>Resisting the disability label</td>
<td>“Yeah, I think that’s sort of made it easy that you’re not defined by your injury or what’s happened, it’s just you.” Nicola (Interview 1)</td>
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<tr>
<td>Responsibility of being the breadwinner</td>
<td>“Well, I don’t have much choice really. I have to stay with full time for as long as I can ‘cos I don’t have a husband or any other support, money, so I have to work, so I’ll just carry on.” Hailey (Interview 1)</td>
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<td>“Keep providing the biggest part of the income in the family.” Jim (Interview 1)</td>
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<td></td>
<td>“ACC weren’t going to pay forever and you have to get back on the bike, as they say, and carry on.” Samantha (Interview 1)</td>
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</table>
The injured participants began to understand the implications of their injury while they were in rehabilitation. Here the value and status of their previous occupation appeared to be temporarily lost as they become ‘patients’ and it appeared others perceived they needed caring for. It seemed a challenge for the injured participants to get family members and friends to envision them in their previous family role.

Polly (Interview 1) identified her work as a stay at home mum, and recalled it took some time for her family to accept her back in that role. She commented she was slowly getting back to being a parent “rather than I’m a patient that needs caring for”, so for Polly, work appeared a way to reinstate her previous role, values, control and to rebuild normality. Nicola and Evelyn also expressed concern at their family becoming carers and losing sight of their pre-injury roles.

Some of the injured participants reported difficulty trying to reconcile their past self with the present and participating in fulfilling activities. Initially, they prioritised rehabilitation but, as they appeared to realise, this could not return them to normal, they started to focus on other things that they felt could connect them to their past lives - such as their work. Some of the injured participants expressed difficulty conceptualising a positive future, Jim described his future was “derailed”, as he felt he had lost the ability to move location and change jobs in his retirement years. Peggy did not RTW as she felt unable to cope in her work role after the earthquake; instead, she had decided to retire and observed the changes necessary to adapt to this life:

... and realise that this has, you know, changed your life and you’ll need to adapt to that change in whatever way is possible for you. And it’s a grieving, you know, there’s a grieving for the past life. If you just accept that, there’s a huge sadness about the impact of what’s happened but you can’t change that. You live with the change. (Interview 1)

With time, all the injured participants described realising the need to adjust their perception of normality. ACC and the vocational professionals described this as “accepting their injury” but for the injured participants it appeared to be moving on from their previous identity, grieving the past, and adapting life around their injuries.

7.1.3 Getting on with life

Most of the seriously injured participants described rebuilding normality as an ongoing process. At the first interview all of the injured participants were still actively
rebuilding normality. By the second interview, a year later (i.e. three years since injury) one participant (Julia) felt she had achieved her goal; most (Hailey, Nicola, Polly, Peggy, Susan, Sebastian, Samantha and Jim) were close, while Evelyn, Taylor and Grace considered they had a long way to go. What was evident between the two interviews was a change in the injured participants’ perception of normal. Between the two time periods they appeared to have come to accept that their idealistic goal of returning to their pre-earthquake selves was impossible and, instead, needed to reconsider what level of normal they could expect to reach. Polly (Interview 2) described it as a slow process involving building on each improvement.

It’s sort of like you’ve always, you’ve got to come to terms with where you’re at in yourself and that can be, like you know, take quite a while and that, but you’ve got to still be able to have goals to achieve ... So on those levels, I find it’s really important that I get to achieve those because then it makes me think, “Yeah, I can start to carve back a slightly more normal way of living.” And it does turn back into, “Well, I’m just sitting in a wheelchair going from A to B” instead of, “This enormous thing has happened to me and it’s very hard to move about in the world because of the enormity of it.”

Nicola (Interview 2) described a positive step to rebuilding a new normality was when others saw past the disability:

And I think the biggest compliment was, I went to the Court Theatre with some friends recently and we got there and they said, “Oh, my god, I forgot you’re in a wheelchair, I haven’t ordered a wheelchair seat.” And to me, that was absolutely amazing because it meant that they looked at me as normal.

So by the second interview, although many of the injured participants were back at work, they did not consider their lives as normal, but were beginning to realise life was as normal as it was going to get, a different type of normal. The injured participants rated life as between 40-90% normal, Nicola (Interview 2) said: “I’m just getting used to the situation [life’s] As close as it’s ever going to be, [to normal] I think.” Susan felt she was closer to considering herself to normal but that others perceived this differently.

They [other people] probably think my injury is like the end of the world but yeah. Its happened, you can’t change it. You might as well get on with life and have a ... well, a normal life as can be and like I said before, there’s positive things. Susan (Interview 1)

In contrast, Evelyn was adamant that life in a wheelchair could never be normal.
Grace did not use a wheelchair; she perceived her injury was serious although she did not meet ACC’s classification for a serious injury. At her assessment to determine the permanent disability pay-out she was entitled to receive from ACC, she was told she had a 54% permanent disability. She described how this confirmed her belief that she had a serious injury and affirmed why she had not returned to ‘normal’. She felt that a 54% disability justified being only able of working part-time and said: “surely they (ACC) can equate that to perhaps full time (work) won’t be for me.” Grace (Interview 2)

Compounding this, the injured participants described difficulty trying to rebuild normality in the changed physical environment due to the damage caused to the city by the earthquake. Evelyn likened it to a battlefield:

Part of me says but how could it happen to me or to us, in Christchurch? And you look around the city now and I just hate it. Drive through it. I took a friend last, the weekend before last around for a drive. It’s just horrible. It’s like a battlefield out there. All that area of central city where I used to work and walk every day; and life was just normal and now it’s just horrible.

Many of the injured participants felt difficulty connecting to the new normal of Christchurch. Samantha (Interview 1) explained: “a lot of them at work don’t like it. We all wish we could just go back how it was. Yeah. But we never will. Christchurch is changed forever.”

For Samantha, the pressure of full time work on top of living in a damaged city had become too much by the second interview. She felt that Christchurch was too damaged to ever return to normal and she could not live there anymore. She resigned from her job and was moving away from the city with her husband, again, creating a new normal for herself and her family.

Yeah, decided. I’ve had enough of Christchurch. I can’t really go into town anymore, I find it too depressing. All the empty spaces now. You just don’t. When you walk down the street now; you don’t know what street you’re in anymore ‘cos there’s no landmarks there anymore. I’m quite happy to leave Christchurch. As far as I’m concerned, there is no Christchurch anymore. Christchurch has gone. It’ll be a new Christchurch but it won’t be the Christchurch I know. Samantha (Interview 2)

In addition, the earthquake caused damage to many of the injured participants’ homes. This created additional delay for many of the seriously injured participants who
described wanting to be home before they returned to work although, for Nicola, working was an incentive to spend time away from the motel she was required to live in following discharge from hospital. The injured participants who spent prolonged periods in motels or rental accommodation waiting for housing modifications and earthquake repairs described how this further impacted on their ability to get back to normality in their home life and environment.

In summary, the injured participants were striving to rebuild normality with many contexts for their recovery also being ‘injured’. They described the first steps of rebuilding normality as physical and emotional recovery, work was described a building block in the process of recovery and returning to normality.

7.2 Negotiating the return to work journey

The category of negotiating the RTW journey describes the process of RTW for the injured participants. The category consists of four subcategories: negotiating style, the disability iceberg, the influence of others, and balancing the journey. In NZ RTW following an injury occurs within the ACC System, so there was an established RTW process the injured participants followed (see Section 7.3).

Participants in all groups described the RTW process as a journey: “everyone’s got their own journey that they’re on” Peggy (Interview 1), “it has been a long journey for the client” Participant G (Vocational); “in terms of the journey forward” Participant K (ACC). Many of injured participants felt the journey had not finished at the time of the second interview, three years after the earthquake.

There were three stages apparent in the RTW journey: (1) planning and preparing for work, (2) achieving work, and (3) maintaining work. Planning work started immediately after injury, with all injured participants describing early aspirations of RTW. Sebastian, who had a less severe injury, recalled using his laptop from the hospital bed to clear his work emails, while Lillian described trying to bring forward her discharge date so she could get back to caring for her husband. However, the injured participants found that when rehabilitation started, and the implications of the injury were realised, they needed to revise their early RTW plans. The injured participants with SCI received rehabilitation through a specialised spinal rehabilitation service, and accessed early vocational input as a standard part of inpatient
rehabilitation. The Kaleidoscope team (Section 2.3) worked with them in the spinal unit and kept RTW thoughts active and focused. Jim (Interview 1) directly linked this early intervention to his subsequent successful RTW:

*And I put that down to the care that I got right from the start. When I was about three weeks into traction and [one of the staff] from Kaleidoscope came in and started to sow the seed of getting back to work and that’s where it started from.*

In contrast, early vocational intervention was not provided to other injury groups. ACC promotes early RTW (Accident Compensation Corporation, 2006) and, although the discussions around RTW are initiated within the inpatient setting by ACC, the main preparation and vocational assistance did not start until the injured participants were discharged from hospital and were, “Out and about” and able to, “Get down to the nitty gritty” of RTW (Participant F ACC). The discharge time frame was dependent on the severity of the injuries – the severely injured participants had the longest inpatient stays and, for those without early intervention, this meant that the RTW process was delayed. This stage of planning and preparing for work continued until the participants were ready to RTW.

The next stage was achieving work. This started when the injured participants physically returned to work and continued until they were working at their assessed work capacity. All the injured participants returned to work on a graduated early RTW plan (Accident Compensation Corporation, 2006) devised in consultation with, or by, their vocational provider. The graduated RTW started alongside rehabilitation commitments, typically physiotherapy, and the injured participants had to balance their time and energy between rehabilitation and work.

*The biggest problem that I’ve had with the return to work, I guess, is fitting in time still for physio because I’m still having physio now and usually the physio is either during the day or straight after work and sometimes that’s bloody hard to manage when you’ve got pressing deadlines and things like that so that’s probably the hardest thing I’m still juggling.* Sebastian (Interview 1)

Most injured participants described struggling with fatigue as they returned to work. Some described their vocational providers as having a good knowledge of their injuries and felt they were in tune with the rehabilitation requirements and understood the fatigue associated with rehabilitation. Others, like Samantha, felt the vocational professional was unaware, or underestimated, the side effects and complications of her
injury and the rehabilitation needs that were impacting her RTW. Samantha (Interview 1) recalled a phone conversation from her vocational provider that demonstrated this:

*It was a work day and I’d come home and I was worn out so I went to bed and she [Vocational provider] rang up and told me off; to get out of bed because she says I’ve got to stay up and try and stay up because one day I’m going to have to go back 40 hours a week. So, yeah, she told me to get out of bed.*

The injured participants described a mismatch between their RTW plans and the reality of the work situation. Nicola expected she would resume her previous specialist role within the workplace and had envisioned methods to adapt her work tasks so they could be carried out from her wheelchair. Her employers had a different view of her capabilities and, because of the layout of her workplace manoeuvring her wheelchair was difficult and precluded access to some areas of the building. This resulted in a change of tasks and roles that could be done in the areas she could access rather than altering the work environment to allow her to resume her previous tasks.

Even though most of the injured participants had anticipated that returning to work at reduced hours would be easy, many of them recalled initially that work came at the cost of other activities. While they describe managing their work hours they felt they had nothing left by the end of the day. This impacted on their family life or caused side effects of their injuries such as fatigue and pain Grace (Interview 2) explained:

*You know, I probably could work full time but I would have no other life. I would either be sleeping, in pain, and in bed, or working. That would be my life. Because I’m still on oxycodone (pain killer), I still have pain every day, all day, chronic pain. Yeah, and I just want to try and maintain some balance in my life.*

The injured participants evaluated their satisfaction with their new work situation and either accepted their work as it was, or further adapted their situation. Many described grieving for the loss of their past job, or elements of the role they had enjoyed. For example, Nicola resorted to doing only the phone-based components of her previous job, which she found less challenging and not as enjoyable as her pre-earthquake role.

The last phase of RTW addressed by the data was what I propose as *maintaining work.* In this phase the injured participants described feeling settled in their work situation and being able to plan for the future. At this point they started to consider their long term prospects, including future job options, promotion and retirement. For example, at the first interview, Sebastian, who had a less severe injury, had a goal of achieving a
promotion at work, and at the second interview he had achieved this. In addition, by the second interview, Jim was confident that he had a job with transferable skills so he was better equipped to plan for the future.

The injured participants in this study advanced through the phases of RTW at different speeds. On the whole the participants made a linear progression through the phases of RTW. However, the progression became cyclic if the injured participants had to return to earlier stages of RTW. For example, Jim explained in the second interview that he had initially achieved work, returning to his pre-injury job but struggled in the maintenance phase as he was unable to achieve his work capacity. In order to achieve his work capacity he needed to change jobs so, with assistance from ACC, he cycled back to the planning work stage before continuing the linear progression through the other stages.

The injured participants negotiated physical obstacles to RTW, but also negotiated with different stakeholders along the way, supported by their family and friends. A number of elements were identified that influenced the journey; the personality of the injured participant, how they identified with their disability, comparisons with other people, the support the received during the journey and how successfully they balanced work with the other roles and considerations in their life.

Negotiating RTW has four subcategories: negotiating style, disclosure - the disability identity, the influence of others and maintaining balance. Each of these factors will be discussed individually.

7.2.1 Negotiating style

Two distinct styles of negotiating RTW were implicit from the interviews; passive and active. The passive group did not initiate RTW; rather they adhered to the RTW plan, as determined by ACC and the vocational professionals, almost without question. Hailey and Samantha both used a passive negotiation style. Neither of them initiated RTW; they described starting RTW when the vocational provider contacted them and they followed the graduated RTW plan determined by ACC. However, they both made a timely return employment. In contrast, Sebastian and Nicola both took an active role in the RTW negotiation and described how they took control and initiated what they considered early RTW. When asked what support she received with RTW Nicola said: 
“\textit{I haven’t, I’ve just done it myself, it’s me that sort of said when I was in the motel, hey}
look I can’t handle this this, I want to come back to work.” Sebastian described: “ACC were actually holding me back because I wanted to come back earlier but they wouldn’t let me so we sort of came to a compromise where I would sort of gradually build my hours up and do stuff from home as well.” However, in hindsight, Sebastian reflected he was thankful that he followed the advice from ACC, as he felt he would not have been able to cope with returning to work as early as he anticipated he could.

Whether an active or passive negotiation style was used generally reflected the type of job the participant held prior to their injury. The injured participants who took an active role appeared more proficient at re-framing their work to suit their disability/impairment, and seemed to create a new niche for themselves while still managing to maintain satisfaction in their modified job. The active group tended to have closer relationships with their employers, and often held roles of value or had skills that were unique within the company. This meant the employer was more amenable to modifying the role of the injured participant so they remained with the company. For example, Evelyn described re-framing her work to maintain the status of her role. She achieved this this by retaining fewer, but still important clients. She felt that because she was well respected in her job and had a good relationship with her employer, she negotiated these changes successfully. In contrast, many of the passive group felt they had been pushed to RTW before they were ready, but they were less likely to argue or dispute ACC’s process. Grace (Interview 1) described this:

*I felt ACC were trying to push me because they like to tick the boxes and one of their boxes, they like you to go back to your previous role.*

Some injured participants with an active negotiation style described conflict with the ACC staff when their perceived RTW timeframes did not align with the ACC trajectory, or they felt unfairly treated. Grace (Interview 1) described being at, “loggerheads with ACC” and that her interactions with ACC felt like a battle. Some injured participants described their attempts to choose RTW hours that suited them were deflected with repetitive assessments and endless meetings and felt little progress was made. Grace (Interview 1) described:

*We’re all having our little battles with ACC on some level or other... But I am quite a battler and I am very articulate and I write. I’m very good at writing letters, statements of correction. And I have written a number of letters to ACC to put on file about my*
dispute, a lot of what their agencies and what they say. I’ve even been to a mediation session.

7.2.2 The disability iceberg

Many of the injured participants expressed apprehension about discussing their disability with their employer, or co-workers as part of their RTW negotiations. They described how the vocational professional took the lead on this as the main liaison with the workplace. However, the vocational participants described being only able to disclose information the injured person consented to.

Because of the high profile of the earthquake, most of the injured participants’ employers and co-workers were aware of their injuries before they returned to work either through word of mouth or from the media. All the participant groups reported employers and co-workers appeared genuinely interested in the recovery of the injured participants, in addition to wanting to know the practical aspects of their injuries that would impact on RTW. Nicola, Sebastian, Grace and Evelyn all described visits from employers and or co-workers while they were still in hospital. However, most of the injured participants stated they did not explain the full impact of their injury to their employer or co-workers, even when their disabilities were visible. Evelyn (Interview 1), who relied on a wheelchair for mobility, felt that although her employers were aware she could not walk, she did not think they understood the other implications of her injury.

They have been very helpful (her employers); I don’t think they necessarily understand some of the complications of my condition, if you know what I mean. People see you in a seat and that’s you’re sitting all day, but as you would know, there are a whole lot of complications behind the [type of injury] but which are hidden to a lot of people. So yeah, I don’t know if they quite get it’s not just about sitting down all day - she does her work but she sits down.

Evelyn was worried that as a result of this apparent minimisation, her employers would overestimate her capabilities and think she was able to do the same amount of work as she had performed prior to her injury, albeit now sitting down. Despite these concerns she still appeared to keep some details of her injury private.

Jim (Interview 1) used an iceberg analogy to describe these differences between the visible and invisible impairments.
People look at me and say, “You’re really well; you’re back to what you used to be.” But it’s a bit like an iceberg, there’s a little bit that people see but there’s a lot more that they don’t see. They don’t see the effort involved each day of getting ready, whereas I used to be able to rush around and quickly get ready. When you get tired, you get tired very, very quickly and that, those are the sorts of things people don’t see. And when you’re having a conversation with them, the effort that you have to put in, is quite intense compared to what it used to be and it has a big toll on people’s energy. And I imagine it’s like that for a lot of people with ... injuries. You just don’t see what really goes on.

To use this analogy, the visible proportion of the iceberg reflected the extent of the injury which was apparent or had been disclosed. Throughout the interviews with the injured participants there seemed to be a relationship between the level of support they received from their employers and co-workers and their knowledge of the injury. The people within the workplaces appeared more likely to help the injured participants if they understood why they needed help. For example, Alexis found it beneficial to share some of her invisible injury side effects with the co-workers she worked closely with. This way she felt her co-workers were able to identify when she had reached her work limit and needed to go home, if she failed to identify the signs herself. However, she did not feel the need to extend the explanation to other company employees. She explained it was important to:

Make sure your boss or your employer understands, understands your injury. They don’t have to know all the details but the, not side-effects ... Like symptoms of when you actually need to stop. For me, things like irritability, emotional blur, like me today... so they know to be able to say to you, “Hey, I think you’ve done enough for today.” Alexis (Interview 1)

Grace, who had made a good recovery from her injuries and could walk without aids, was provided with a chair to use at work by her vocational professional, as standing for long periods was tiring and aggravated her pain. Because her injuries were not visible Grace described, “rumblings among some team members” who thought it was unfair she could use a chair at work when other members of staff were not allowed: “if she can do it why can’t I.” Grace considered her co-workers may have been more sympathetic if they were aware of the extent of the injuries that required her to use the chair; such as the pain she experienced after long periods of standing. She admitted: “I don’t think they have a great deal of understanding” but did not feel inclined to share more details about her injury because, “it’s not their business.” Similarly, by two years
after the earthquake Samantha, who had less serious injuries, felt her co-workers had forgotten about her injuries and were unreasonably pushing her to work harder, even though she found being on her feet physically demanding.

Overall, the injured participants described being conflicted; they did not want to be identified as disabled, so did not disclose the full extent of their disability, but they wanted appropriate assistance and on-going understanding from their co-workers about their limitations – difficult when many were unaware of the hidden consequences.

7.2.3 The influence of others

The RTW journey was not negotiated in isolation; injured participants described different types and levels of support that influenced both their RTW experience and the outcome. Support was described as emotional, practical or informational and came from family, friends, peers and vocational professionals; but not all of the support was positive.

Access to non-professional emotional support appeared dependent on the individual’s resources and their ability to manage their support networks to meet their needs. Because the earthquake affected everyone in Christchurch there was also an impact on the support networks of the injured participants. People who would normally provide support for the injured participants were dealing with their own issues following the earthquake; such as loss of loved ones, damage to houses, changes to their work environment, distressed families as well as their connection to the injured participant. The injured participants expressed reluctance to put added pressure on these people.

I’ve got family here but then they were - their house was munted (broken or damaged beyond repair) and they were pretty locked in with their own stuff. They were great but you know - And I’ve got good friends and some of their houses weren’t as badly damaged so people brought meals. Peggy (Interview 1)

All the injured participants employed at the time of the earthquake were entitled to, and received vocational assistance provided by ACC to RTW. Sebastian and Jim described the practical support for RTW came through a “collaborative approach.” Sebastian (Interview 1) said, “Between her [vocational professional] and myself and the directors here and ACC it was sort of a collaborative approach.” However, some of the injured participants felt the health professionals were unsupportive of RTW. One example of this was described by Taylor (Interview 1). Although she was provided with a
vocational professional through ACC she had not gone back to work. Instead she considered rehabilitation was her new work: “as of now, my job is doing rehab. My job is to get back up and get to my goal of being able to walk around,” a decision reinforced by her physiotherapist:

When I had my physio, I said “What would you think about me going back to work?” And he said, “Well, no, because you need all your physical, mental energy used for your rehab ... I think it’s like 400 times more energy I use to walk than a person with legs so all that energy and the mental part of it, because it’s also mentally you know ...

Susan also encountered a negative health professional. Unlike Taylor, she wanted to get back to work but found her occupational therapist (OT) in the community unsupportive of her RTW decisions:

One of my worst days, since I got out of hospital, was when my first OT that I had, in the community, basically just told me, that I have a disability and I shouldn’t go anywhere and blah, blah, blah and sort of thing. And when she left, I like bawled my eyes out, and I was just depressed and just, I think because it sort of felt weird. An OT should encourage you to get your life back ... Susan (Interview 1)

Neither of these injured participants described a team or collaborative approach to RTW and felt unsupported as there were no agreed RTW goals.

Practical support was also important for RTW. One example of this was the need for transportation to get to work. When there was snow in Christchurch Nicola described practical support from a colleague who gave her a lift to work when she was unable to use a taxi. Hailey and Samantha also described how their co-workers helped them practically with simple tasks like lifting heavy items and reaching things off high shelves that they could not access themselves. But this support in the workplace appeared variable. Samantha described that support from her co-workers decreased over time.

Evelyn and Jim described they had socially responsible workplaces who always treated people returning after injury or illness well.

There are lots of people that have either had workplace injuries or maybe a stroke or something like that, and they go back to work the same because the company is very high on its social responsibilities and its ... It takes its workers and its families very seriously and has a lot of commitment to them. Jim (Interview 1)
The support from co-workers also appeared dependent on how the injured participants’ absence had been covered. Often co-workers had taken on additional roles or responsibilities, and there were varying responses to the relinquishing these back to the returning injured participant. Nicola (Interview 1) had difficulty resuming her previous work roles as her co-worker did not want to relinquish them. She felt that this was, “work jealousy.” She described being told by a manager that she could, “hardly expect them to step down and hand it all over to me again, because, you know, that had become part of their work and they were enjoying it.” Conversely, Sebastian (Interview 1) reported getting an email from one of his directors who was covering his role before he returned to work saying, “Come back to work soon. I didn’t realise how much you actually do for me.”

ACC provided financial support, including paying for travel to work, by providing taxis when the individual was unable to drive themselves independently because of their injury. However, taxis were not always easy to access at the times the injured participants needed then. ACC also provided funding towards an accessible, self-drive car which facilitated access to work for Susan, Evelyn, Polly and Nicola; however, these took time to be approved and delivered.

The type and providers of support changed throughout the RTW journey. The injured participants reported that most of the formal support from health care professionals was evident during the hospital admission and immediately after discharge. External supports such as social groups and churches were used more on discharge from the hospital, but many of these were also disrupted by the earthquake, either temporarily suspended or relocated due to damage to buildings. Lillian had not accessed psychological help during her hospital stay. She was not in paid employment and was the main carer for her sick husband. She had been injured at home and had not asked ACC for any practical or emotional help. When asked what support she received she said:

*The only support I really got probably would be moral support. ... We haven’t been much and, because our church has moved from in town, and it’s just an effort getting there. So we sometimes go once a month or thereabouts. But moral support is really a big thing; and just having somebody there to talk to. Lillian (Interview 1)*

The injured participants had access to agencies not usually involved with general trauma. The majority of the injured participants spoke of the different types of support
provided by the Red Cross\(^3\). First, financial support was available in the form of grants, which earthquake survivors could apply for; they were used by some of the participants to fund modifications to their homes that ACC would not fund, or put towards vehicles which aided independence and provided transport to work. The injured participants describe how Red Cross, “*was a huge support*” (Grace Interview 2). Nicola (Interview 2) described how, “*Red Cross came into our homes and actually listened to our needs whereas ACC told us what we were allowed, and as each problem came up.*” The injured participants appreciated this interview with Red Cross and proposed that they were helpful, at least in part, because they were a neutral organisation and not linked to the funding context. Red Cross also supported The Earthquake Survivors Trust which was created by the injured earthquake survivors to raise funds to support the children of people who died or were injured in the earthquake. However, it also served as a source of informal peer support across a group with various injuries. They met regularly for coffee, dinner or meetings. They also provided informational support such as arranging a psychologist from Australia to talk to the group about psychological recovery. The injured participants felt other earthquake survivors understood their situation better than friends, family, workmates and health professionals as they had similar experiences of the earthquake, and living with an earthquake injury. Sebastian described the group as like a family. Grace (Interview 1) described the connection they all had:

> ... *I mean, we’re all different but we understand each other and its good, the friendship and the togetherness, knowing that they know instinctively without you having to blah on, what you’re going through.*

In addition to The Earthquake Survivors Trust, Sebastian had built a small but effective network of friends who he relied on for support. He described receiving support from co-workers who had shared the same earthquake experiences trapped in the work building, and played a supportive role in his RTW:

> *I wanted us to be back as a team again as well because of everything that we’d been through. And I think you find a bit of support in each other when you’ve been through a massive trauma like that ...* Sebastian (Interview 1)

All the injured participants acknowledged the formal support offered to them as individuals; however, they found that this was to the exclusion of their wider family group. The pre-earthquake role of the injured participants within the family unit

\(^3\) A New Zealand registered charity with a mission is to improve the lives of vulnerable people by mobilising the power of humanity and enhancing community resilience.
impacted on RTW. The injured participants who had support roles in the family (Evelyn, Polly, Alexis, Nicola, and Lillian) found these difficult to resume immediately following their injury. The majority of the injured participants, particularly Evelyn, Polly and Alexis, who had dependent children living at home, felt dealing with their families issues were more important than work; they did not feel they could resume their paid employment until their family roles were re-established. The lack of support for the families was observed by the Kaleidoscope team who worked with the SCI injured earthquake survivors during their inpatient stay.

You know, the parent, whether it was the father or the mother, that was in hospital, having to deal with, one the injury, then the earthquakes and everything, but also the worry of the extra stress that it was putting on the family, that wasn’t just because of their parent being in hospital but their circumstances and their life was completely up in the air as well, especially if they had to all get out of their home as well. It was like everything happened at once and there’s been a lot of hard stuff going on for parents in here, really, really difficult, really emotional and yeah, quite heart-breaking really.

Participant G (Vocational)

7.2.3.1 Comparison with others

The injured earthquake survivors used comparisons with other injured survivors to motivate, reassure and benchmark their progress on the RTW journey. This comparison was more noticeable in workplaces with multiple casualties, as one of the vocational providers described:

The people I was dealing with, the injured people, some of them felt a bit ripped off that they weren’t there, therefore, they weren’t getting the attention and the special treatment and that seemed to have a negative impact. And then there were some people who were injured just a little bit, like maybe lost the tip of their little finger from having it lying on the desk when they hid under it. And some of their reactions were: “It’s only my little finger, his injuries are much worse. I should just get on with it.” But other people were saying: “Well it’s only the tip of my finger but it’s terrible for me and I can’t possibly work.” So that sort of, I think people were pitting them against each other or comparing themselves a lot more than you normally would. Participant E (Vocational)

The injured participants compared their RTW timeframes, the hours they worked, and the accommodations made by their employers with the other earthquake survivors. For example, Susan (Interview 2) compared the hours other earthquake survivors were working to benchmark her progress:
Well, I know Samuel (another injured earthquake survivor) does about that (20 hours of work); maybe a bit more than that ’cos I know he works five days but not full time. So they’re happy with him doing that at the moment so I don’t see why they wouldn’t be happy with me. I know some people who are still not back at work so twenty hours should be plenty enough.

Some used these comparisons with other injured earthquake survivors to maximise their own entitlements from ACC and challenge decisions if they were turned down for equipment or entitlements that they knew others had received. Susan (Interview 2) explained:

…but it’s quite good like having some of the people: “Oh, how come you’ve got that?”... So at least I can use that to my advantage because everything Taylor has. “Oh, you’ve got a hard back, I want that.” And then she gets it because we have the same OT.

The ACC participants described these comparisons in the injured earthquake survivors were more pronounced than they usually experienced.

So we often get, “Well, if Fred down the road got that, why can’t I get that?” And so it was probably just exacerbated even more with this group because they were so connected and had that, as they should be, they had that shared experience and things to pull them together. Participant K (ACC)

Within the ACC system people in the serious and non-serious injury categories receive different entitlements due to legislation. However, these distinctions in entitlements were not apparent to the earthquake injured individuals who pushed their case managers for entitlements they saw others getting, creating increased pressure on ACC case managers.

Despite the connections formed across injury groups a hierarchy of injuries was evident within The Earthquake Survivors Trust. Those who used a wheelchair following injury and had highly visible injuries, such as amputations and SCI, were top of the hierarchy. The amputees identified strongly with the SCI group.

Because amputees are usually up and walking whereas I kind of almost define, not define, but I almost feel like I’m more in a paraplegic world because they have legs and can’t use them. I either have my legs on and can’t use them; my cosmetic ones, or what I’ve got left.
The injured participants with amputations appeared to find being identified by the public as having a SCI easier to deal with, perhaps because bilateral amputees are uncommon injuries.

Taylor felt that she was at the top of the injury hierarchy, and had less sympathy for the people with less serious injuries. She explained this in her second interview:

*There’s supposed to be 23 seriously injured people which I just laugh at because I can only count about six of us that are either, well, basically that are all in wheelchairs so limb loss or paralysation (sic) and the rest are, still bad for them because obviously it’s, you know, they were probably fine before, now they’ve got something to deal with, but I mean, most of them have got no problem, they’ve got their limbs, they’re walking and you know, nothing too major, so. Some people like to, I don’t know, try and make it sound better than it is; like how serious it is and this and that.*

The less injured participants were not all included in The Earthquake Survivors Trust group and missed out on that source of support. Because of the injury hierarchy, they felt uncomfortable talking about their own experience and felt the more seriously injured earthquake survivors considered their injuries trivial. Hailey in her second interview commented:

*Everyone had different situations and they’re sort of - I got the feeling from them all that everybody thinks that they went through more than the other one and it is a little bit hard, you know. They want to talk about what happened to them but they don’t actually want to know what happened to you. Well, I found that with different people. Yeah. And then some people, you know they’ve had far worse injuries so you don’t want to talk about yours when you know you haven’t. You’ve come out with your legs and your arms and everything’s all good. You don’t want to put that on them.*

This comparison with others, therefore, had both negative and positive consequences for the RTW journey for the injured participants.

### 7.2.4 Maintaining balance

The injured participants described working hard to establish and maintain the balance of RTW with other aspects of their lives they also considered important. Evelyn, Nicola and Alexis had children living at home and were working at the time of the earthquake. They described how they had to consciously balance these roles, with the impacts of their injury in the post-earthquake period.
In addition, there were added family dynamics following the earthquake which needed to be considered. Children of the injured participants were not only coping with the implications of a seriously injured parent but also their own psychological impacts of the earthquake – some had witnessed their parents’ injuries. Helping their children was a priority for the injured participants who were mothers and it put additional pressure on them, especially those with a long hospital stay. Even when they were discharged from hospital Nicola, Polly and Evelyn were unable to return to their home and lived in motels away from their families while they waited for housing modifications. Nicola (Interview 1) described this as, “shocking” and, “the worst thing you could do to someone” and claimed, “you can’t be a family at the motel.” This physical separation from their families made returning to their pre-injury parenting roles more difficult. The vocational participants also noticed the family issues these women were balancing.

They (the female earthquake injured survivors) had teenagers who were struggling through the earthquakes whose high schools changed to a different high school, who had to go to school ‘til the evening, coming home in the dark because they were sharing the school. High school children going off the rails, the fathers not coping and that sort of thing going on in the background while the, you know, the parent, whether it was the father or the mother, that was in hospital, having to deal with, one the injury, then the earthquakes and everything, but also the worry of the extra stress that it was putting on the family, that wasn’t just because of their parent being in hospital but their circumstances and their life was completely up in the air as well, especially if they had to all get out of their home as well. It was like everything happened at once and there’s been a lot of hard stuff going on for parents in here, really, really difficult, really emotional and yeah, quite heart-breaking really. Participant H (Vocational)

A number of the vocational and ACC participants recognised the issue of balancing work with rehabilitation needs. Participant E (Vocational) explained:

So I think for some serious injuries, rehab has to continue and it has to happen at the expense of work because it’s, for a lot of clients, still a priority, depending on your injury, I think, the rehab has still got a priority over work. The work is more about keeping them engaged, giving them something to do in their week that is not rehab-focused, keeping a job viable and job security, with the long term prospect they may sustain either part-time or full time work.

Injured participants described the need for flexibility and understanding from the workplace to enable a successful balance of the work and rehabilitation activities. Although all the injured participants felt RTW was important, rehabilitation was
considered to be of equal, or more importance; their reasons to RTW become pertinent in determining which activity took preference in the balancing act.

The more severely injured participants, those with SCI and amputations found the thought of RTW daunting because of the additional time and effort it took to achieve basic every day activities, such as getting washed and dressed meant that they had little time and energy left for the rest of the day. Alexis (Interview 1) explained her personal experience:

*It’s that whole balance because for so long I was prepared to put everything else at the wayside, do nothing all weekend, sleep, get my in-laws to have my child, just so I could work. And now it’s, it’s not reality. So it’s trying to strike that balance between yes, working, maintaining, but also everything else has got to still function.*

Taylor and Evelyn in their first interview described feeling unable to deal with the physical demands of work and planned to postpone RTW until they finished rehabilitation.

*I don’t see that I can work a full time job. It’s just too much involved, and the fatigue is too great. So that by that the end of the day if all I’ve done is spend all my time at work there will be nothing left for anyone else. It will just be complete write off, and I don’t want to end up in that situation. Evelyn (Interview 1)*

By the second interview, most of the injured participants acknowledged their physical recovery was as good as it was going to get; even though they recognised they were still not back to ‘normal’. Sebastian and Hailey had achieved RTW full time but had decided to stop working overtime. Instead, they conserved their energy and made time to enjoy other things such as spending time with family and friends. Sebastian (Interview 2) said:

*I think the earthquake makes you, has made me realise that there’s more to it than that (life than work). Nobody ever lay on their deathbed and said, “I wish I’d worked more.” They always say, “I wish I’d travelled more. I wish I’d hung out with my family more” or whatever. So I think that’s probably the key thing for me.*

Similarly Susan, Nicola and Evelyn were satisfied working twenty hours or less a week; where previously they had worked full time. Working part-time allowed them to make time for their family, maintain their fitness and cope with their work load – so were reluctant to increase their work hours. Susan described how she planned to increase her work hours from twelve hours a week to sixteen hours per week but
explained: “but I think I’ll stop at twenty, just ‘cos there’s so much other stuff going on.” While many of the injured participants were happy with part-time work, they felt there was pressure from ACC for them to work thirty hours a week (which ACC considered full time employment and the point at which they stopped paying weekly compensation). Grace (Interview 2) explained:

*I still really feel that my body is only capable of 20 hours a week. ACC, of course, say that there will be a job out there at 30 hours a week and they will find it and take me off my weekly support. We’re still a work in progress on that.*

Most of the injured participants appreciated the financial support from ACC and did not want to lose it. Nicola (Interview 2) was worried about the financial implications of working 30 hours, and angry about the possibility of losing the weekly compensation from ACC:

*I feel really angry about them (ACC) pushing. I still cannot understand how they can make somebody, the likes of myself, who did 54 hours for ten years previous to the accident, because I needed that to sustain this place, with a large mortgage, how they can force me to call 30 hours full time work and then pull the plug, that’s it. You don’t get topped up. Yet there’s people there who are still being supported by ACC fully.*

In summary, the injured participants described different reasons influencing their RTW, which influenced how they negotiated their RTW journey. The injured participants either took an active style of negotiating RTW and led the process or, alternatively, used a passive negotiating style and followed the process. The injured participants used support from various sources and benchmarked RTW against other injured earthquake survivors to gauge the progress of their journey. They worked hard to balance their RTW, initially with their rehabilitation, and then with other aspects of their life as they rebuilt normality.

### 7.3 Operating within the system

The category *operating within the system* describes the ACC system in which RTW took place. The four subcategories of operating within the system are: *determining entitlements, managing goals and expectations, business as usual* and *building relationships*.

All groups of participants identified specific characteristics of the ACC system that impacted on the RTW process. Although all the examples presented in this section
relate to RTW within the ACC system, injured participants identified similar characteristics in the health system which impacted on their rehabilitation.

7.3.1 Determining entitlements

Determining entitlements described the predominant interaction between the ACC staff and injured participants. ACC participants described their roles as coordinating entitlements for earning related compensation and the vocational services related directly to the RTW process. They were responsible for funding for rehabilitation, adaptive equipment, home modifications, vehicle modifications and some transport costs. Although these entitlements were not all directly linked to the RTW process, they had an indirect influence on RTW. As mentioned previously, the first priority for the injured participants before considering RTW was physical recovery. This meant that the outcome of other entitlement decisions based around physical recovery, such as the length of therapy input, were also important in the overall RTW process. ACC participants described entitlements were determined by matching clients’ injury needs against set criteria. The injury needs of the person underpinned the entitlement decisions, and superseded other considerations, including the personal opinions of the ACC participants. A strong element in the interviews with the ACC participants was the perception that ACC provided fair entitlements for the injured participants. However, even if the ACC participants felt the entitlements were generous or appropriate, they observed that this was often far removed from the clients’ expectations. ACC participants described making decisions that were accountable and transparent and explained they felt they had to carefully consider entitlement decisions as they were spending tax payer money.

It would always be nice to be able to do more. I actually believe that ACC provides a generosity of entitlements and ACC staff members do have an obligation to ensure that people receive what they’re entitled to, no more, no less, because it’s the taxpayer’s dollar that we’re spending. Every time we approve a payment for something, be it weekly compensation or vocational rehabilitation or orthotics or physiotherapy treatment or an occupational physician assessment or whatever the case might be; that’s the taxpayer’s dollar and we do need to be accountable for that. Participant J (ACC)

Evelyn described the ACC staff as “gatekeepers” of the system and felt they tried to push her away and minimise the entitlements they granted. From the opposite perspective, the ACC participants acknowledged the conflict they often experienced
operating within the system and determining entitlements for the injured client.

Participant J (ACC) explained:

*There are times that we need to say, “No” and, as ACC staff members, we would dearly love to say, “Yes” but our legislation is there for a purpose and we need to be fair. If we give more to one, where do you draw the line?*

The RTW process for the injured participants seemed to follow ‘usual’ and ‘predetermined’ ACC processes. First, a medical assessment was seen as pivotal in staff determining the injured participants’ capacity for work. This assessment was often based on a short interaction between the medical assessor and the client. Participant A (Vocational) explained how medical assessors used medical notes and reports from health care specialists as part of the assessment process. Participant A believed the assessments were easier when these reports were complete and comprehensive; and described the process they went through for the assessments:

*I have a look at them pretty quickly. You can’t make an absolutely perfect assessment but I have got to decide if they need any further investigations whether they need any further referrals to any other urologist, orthopods or anyone like that, and then, or whether they should take part or they need to be seen by a psychologist or pain management team or there is a thing called a return to work programme. To look at a work programme so it all depends, sometimes I think that I see them too early because um like someone who has had their shoulder repaired there is really no point in having a look at them for four to five months basically. The whole idea of the assessment is to see if they can return to their pre-injury occupation.*

Participant A identified that injuries may have been missed in a small number of the injured earthquake survivors and said:

*We’ve had unrecognised head injuries and now they are exhibiting the post-concussion syndrome and they have been missed and then there is a block because ACC has not been notified of those things because it has not been diagnosed so you have to start the whole thing again, putting in a claim to ACC for a head injury for chronic pain or something like that which considerably delays the process.*

Participant A proposed injuries had been missed in the transfer of patients to other cities for treatment after the earthquake. Another suggestion was that initial care had been focused on life saving procedures meaning secondary injuries or conditions may have been missed, or specialist follow up had been completed, but because they had not seen the patient initially so had missed ongoing problems. They explained this was problematic if injuries were not reported appropriately or not lodged on ACC
paperwork, as they were then not taken into account in the work capacity assessment and a person’s problems could be underestimated.

Externally contracted health professionals assessed the extent of disability of the earthquake survivors and their capacity to RTW, which formed the basis for entitlement decisions. The injured participants described scepticism in the accuracy of these reports as they felt the professionals completing the assessment did not know enough about them or their situation. Grace explained how, when assessing her capacity to return to her previous work, the assessor based the decision on an ACC description of a management role rather than determining what she actually did:

*I went to a work rehab assessment that their physical demand level document, I think, is, their reference document is dated 1996, I think. I can check. I’ve got a folder. And they say a manager sits at a desk and occasionally drives a car. You know, so that’s what ACC are basing that I can go back to (work) on. And it’s simply not true.*

It appeared determining entitlements for the injured earthquake survivors classified with non-serious injuries by ACC were more straightforward, possibly due to their claims being less complex. The initial decisions around the medical treatment appeared clearer, and all the injured earthquake survivors were satisfied with the way ACC handled their initial medical treatment. Peggy (Interview 1) described it as, “*wonderful*” and said she, “*couldn’t fault them,*” while Hailey (Interview 1) said they, “*handled it really well.*” More conflict appeared in the serious injury cases around complex decisions such as housing and RTW. Susan (Interview 1) described difficulty getting equipment and having temporary modifications to the rental property she was in for over a year, while she was waiting for housing modifications. Grace believed: “*they’re very good at caring for you in the initial stages*” but described her ongoing interactions with ACC as a, “*battle.*”

In summary, front line ACC staff coordinated assessments of entitlements for the injured earthquake survivors which included RTW support and compensation. The ACC participants felt the people injured in the earthquake received generous support, services and compensation within the constraints of the legislation. However, missed or incorrectly documented injuries impacted on the medical and vocational RTW assessments and therefore, impacted entitlement decisions. The entitlement decisions for the seriously injured participants appeared more complicated than for less injured
participants. Disagreements about the entitlement decisions could transform the relationship between ACC and the injured participants into a battle.

7.3.2 Managing goals and expectations

One issue apparent in the interviews across the different participant groups was the discrepancy between the expectations of the injured participants and the services and support ACC could deliver within the legislation and their interpretation of that legislation. The expectations of the injured participants appeared higher than that the ACC staff usually encountered – that is usually considered without the context of the cause being an earthquake. Participant K (ACC) described this as “challenging,” she explained:

_There were really high expectations that put on and surrounding those clients that sustained their significant injuries in the earthquake. So that was challenging in terms of their levels of expectations but also the expectations of others._

Grace (Interview 2) felt the financial outcomes she could have received from her injury were restricted because the ACC system does not allow for litigation following an accident, during her second interview she explained:

_I do feel quite angry about the whole thing, though. ‘Cos I do feel, you know, as far as my accident, and the building falling on me, it was in no way my fault. Like, I didn’t get into a car and drive drunk or I didn’t drive carelessly, even if I was sober, you know. I didn’t cross a yellow line or anything. A building fell on me, and if this non-sue law was not around, most of the earthquake victims would be able to sue Council, building owners, employers, you know. We’d all be multi-millionaires, probably if we had a different type of legislation in New Zealand._

The media attention coupled with initial promises of support from prominent NZ officials immediately after the earthquake also appeared to escalate the expectations of the earthquake survivors. Participant K (ACC) proposed the different expectations of the injured survivors were fuelled by outsiders:

_There was also some fairly high level expectation setting done so I had heard stories where some fairly prominent politicians and things had said to them, “Whatever you need, you’ll get,” in fairly early days but that sets a scene moving forward._

One of the vocational professionals described being contacted specifically by ACC and asked to provide exceptional service to the earthquake survivors.
I had a phone call from a case manager just after the earthquake and said, “From ACC’s perspective, we want to deal with these people, these severely injured people, that were earthquake injured, you know, dragged out of buildings and stuff like that, in a different manner to what the usual is. We want to give them a little bit more support and empathy and we’re gonna put some resources in.” You know. And I thought, that’s good. That’s nice, but in reality, a few months down the track, it didn’t work out that way at all. There was no change to their attitude or resources put in at all. Participant C (Vocational)

Although the three participant groups: the earthquake injured clients, ACC and vocational providers appeared to collaborate in the RTW process their perceptions of what constituted successful RTW differed, leading to different goals of RTW. The injured participant’s reasons for returning to work are described in Section 7.1.2.1. The vocational providers included terms such as ‘enjoyment’ and ‘fulfilment’ in their definition of successful work. While the ACC participants included descriptions of health and QoL benefits in their definition of successful RTW, they also considered the number of hours the individual worked or reaching capacity for work as part of this description, that the other participants did not. (Table 7.2.).

Table 7.2 ACC and vocational providers’ definitions of successful return to work

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<th>Definitions of successful return to work</th>
<th>Vocational providers</th>
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<td>“So it really is about looking at what the capacity of the client is and matching the expectations to that or matching the employment outcome to that.” Participant K (ACC)</td>
<td>“A successful return to work for me is actually the person doing a job that fulfils them, that they get job satisfaction for, that they’re valued in, and one that they have chosen for themselves” Participant B (Vocational)</td>
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<td>“We sort of keep going back to see if they can... to work towards their maximum abilities. Because some say they could do 15 hours a week but they’re in a job of five hours a week so how do we get them up to 15 hours. It’s more about the social side of things too, not, you know, it’s about getting them out, back in the community and self-worth and things like that, so.” Participant F (ACC)</td>
<td>“I think a successful return to work is somebody who’s back in their pre-injury role, managing it well, comfortable, confident with an employer who is happy with their contribution to work. So they’re not necessarily 100% better yet, but certainly, 100% functional in their job.” Participant E (Vocational)</td>
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<td>“They’ve returned to A, to some work that they feel is fulfilling and they’ve exited the ACC scheme. Yeah, successful outcome.” Participant I (ACC)</td>
<td>“That they return to their pre-injury role in a physical capacity that is as close as possible to what their pre-injury physical function was, in a timely fashion.” Participant C (Vocational)</td>
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When I asked what she considered a successful RTW, Participant B explained the vocational providers had a broader perspective about the role of work, and considered the bigger picture.

*I mean it’s interesting that you say a successful return to work, because for me, and I know the other consultants, we all see success in someone coming in and saying, “Oh my gosh, I can grip something.” And therefore, “Hey, in fact, maybe I can do hairdressing again.” Or, you know, “I’ve taken a few steps today.” And so, for us, work is part of it but it’s about the steps towards independence as well. So for me, success is measured in the person seeing that there is life post [type of] injury and that twinkle in their eye and the hope that is fostered.*

These differing definitions of successful RTW meant that although all the participant groups were working towards the common goal of RTW, their expectations of success appeared poorly aligned. The injured participants’ goals were to get back to normal, and work was a part of rebuilding a normal life. The vocational participants expectations evolved around the functional benefits of being in a satisfying job that would build them back to full physical capacity whereas, the ACC participants seemed focused on achieving work capacity and exiting the ACC scheme. As Participant K (ACC) stated: “at the end of the day, we’re still a, essentially, an insurance agency that provide funding.”

ACC participants described the order of RTW that ACC followed, with the ideal option being to return the injured client to the same job with their previous employer. If this was not an option, then they looked to return to the client to the same job, with a different employer. Finally, if this failed, the next option was to look at other jobs. Grace, Jim and Nicola returned to their previous roles but were unable to achieve their full work capacity, so further assessments were used to identify alternative jobs where their full capacity of work could be achieved.

Participant F (ACC) describes this situation (emphasis added):

*For one of my clients, we’ve tried to get him back to his original injury (work) and it hasn’t been successful so they’ve [vocational professional] certainly been assisting with that. But we’ve certainly come to the realisation that … Well, he needed to come to the realisation that his work that he was currently in was not really going to … was not really suitable, too much fatigue etcetera. And he decided to, well, we helped him decide, not help him decide, but I think it was important for him to have that time to realise that things have changed, need to look at another career.*
Similarly, Jim had returned to a physical job he enjoyed, but was faced with the prospect of changing jobs because he felt physically unable to manage a return to full time hours. ACC contracted someone to work with him to find alternative work. However, Jim explained he did not like the direction the work broker was taking, as he felt the job options suggested were outside his expert field. He responded by taking an active role and leading them, “in a direction of a job that I’d done before but instead of being hands on the tools it was to be office-based.” In the end, Jim considered the change of job was a positive move which gave him more stability and better options for his work future. He expected to be able to RTW full time and wanted to have suitable work options as he headed towards retirement.

Nicola (Interview 2) was facing a similar situation to Jim, and was fearful of the financial implications of changing jobs. She had expected that the provision of ACC weekly compensation would mean she could work reduced hours and retain the same money as she earned prior to her injury. She explained:

_She said [ACC support coordinator], “You can go back onto ACC but it’ll only be a top-up to the 30 hours, not a top-up to the 54 again [the hours she was working pre-injury].” ACC sent me to this identification, employment identification where I’ve made a shortlist of eight jobs that they feel I could do and sustain for 30 hours.... But they’re all a $10 an hour cut ‘cos while I was going back to 30 hours, you’re going to be paid and they don’t top you up to what I’m earning now. So if I went to a $20 an hour job, ACC don’t top you up to $30 that I’m on now. So you not only take a loss of hours, you take a loss of income._

Although the injured participants welcomed the financial support from the ACC compensation payments, which initially reduced the financial pressure to RTW; they appeared to have unrealistic expectations about ongoing compensation from ACC. Nicola (Interview 2) described: “we’re all terrified of this financial loss and the financial insecurity.” Some of these expectations arose from a lack of knowledge on how the ACC compensation worked. The ACC participants admitted the complexities of the weekly compensation and how difficult it was for clients to understand.

_for us, it’s a day to day thing, we do it every day, we understand it, but somebody who’s just come in onto ACC and has got all of these things to process, you know, doing that, ensuring that you’re explaining that they understand. Participant D (ACC)_
This section showed differences in the goals and expectations the different participant groups had of the RTW process. The injured participants’ expectations appeared different from the clients the ACC participants usually dealt with.

### 7.3.3 Business as usual

The earthquake produced in excess of 7,000 ACC injury claims. Despite the large volume of claims and the nature of the injury, the message ACC participants conveyed clearly during the interviews was “business as usual”, that no specific accommodations were made to the system for clients injured in the earthquake.

*Our service stayed the same. We didn’t, there were no changes to our criteria or the way we worked with our clients. It was still the same so we had those clients that were deemed to be considered under, would have been considered under NSIS⁴, were the same. Yeah, so it was effectively business as usual for us.* Participant K (ACC)

The ACC participants considered it a sign of professionalism that ACC continued with *business as usual*. Staff at the Christchurch ACC office had first-hand experience of the earthquake and empathised with the injured earthquake survivors. They appeared to separate their personal feelings from the delivery of service and strived for consistency, which they equated to a fair system.

*We should, it should be seen that we are consistent across and why should we treat anybody different from an earthquake person to a non-earthquake person? They should be exactly the same.* Participant F (ACC)

The ACC *business as usual* approach was perceived by many of the injured participants as a lack of empathy. However, despite the *business as usual* approach, some vocational participants believed the earthquake group were different from the usual ACC clients and questioned the lack of additional support provided.

*My own private thinking do they get compensated like someone who has had a road traffic accident or do they need more understanding or greater degree of compensation for the psychological trauma the physical trauma the lack of support you know what I mean? … When a disaster of that magnitude occurs what the hell do you do it could have been, it would have been different … ACC applies the same rules that apply to everyone I think, that’s my perception of it. I mean it’s not like a car accident that happens suddenly the earthquake was a pretty serious affair all round, and people have been displaced from their homes I mean mobility is a problem at the best of times and when your own home is destroyed and you can’t get back to your own house let alone*

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⁴ National Serious Injury Services
the alterations it not a good look; and not everyone had support as everyone was on sixes and sevens, not just them, everyone had their own problems Participant A (Vocational)

Most of the injured participants required some repairs to their homes because of damage sustained in the earthquake. Although the rest of Christchurch was also facing similar EQC battles\(^5\), the process was complicated where housing modifications were required, and when alternative wheelchair accommodation was required, as accommodation was in high demand. The injured participants described frustration at the lack of coordination between ACC and EQC where EQC were responsible for earthquake repairs to the house and ACC were responsible for housing modifications. Evelyn felt she managed to get the two agencies to work together and was back in her home eleven months after the earthquake; however, Polly (Interview 1) described the issues she had with this process, where there appeared to be no consideration to the difference the earthquake made to housing repairs, and that it was \textit{business as usual}.

\textit{And the guy, I think it might have been from Enable, turned round and said, \textquotedblleft Oh don’t be so silly. We won’t be rushed. We’re in the business of putting people into modified homes every week in New Zealand and we’ll do it when we’re ready to do it\textquotedblright;...So those are the sort of things you get to deal with, being an earthquake victim and plus an ACC client.}

The apparent inability to change processes to coordinate work modifications to fit with EQC housing repairs frustrated the injured participants who wanted to be settled at home before they considered RTW.

Despite declaring ACC continued \textit{business as usual} for the earthquake survivors, during the interviews the ACC participants described adaptations to processes and service delivery as a direct result of the earthquake: \textit{there can be shifts in policy and there were some shifts immediately after the earthquake that were put in place to ensure that our clients’ needs were met.}”

Participant J (ACC) described how ACC contacted all their existing clients to check they were safe and assess their needs:

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\(^5\)EQC has completed more than 92 percent of all building claims in Canterbury, including more than 63,000 managed repairs through the Canterbury Home Repair Programme (figures as at December 2014). This has not been a straight forward process and many people have had drawn out negotiations with EQC and their insurance companies.
Immediately after the earthquake, it was needs-must, so our primary concern was to ensure that those clients who required assistance, in particular, our serious injury clients, that their needs were met. People who required oxygen tanks and attendant care and who couldn’t cope without those ACC funded services, they were our primary concern. But we actually had a workgroup set up immediately to deal with those people. In addition, she reported ACC assisted clients by automatically continuing weekly compensation for people in Christchurch without them having to renew medical certificates. However, other more subtle changes to procedures were identified by the vocational providers who described discretionary actions of individual case managers, such as setting prolonged RTW timeframes for the earthquake injured clients. The vocational providers considered there were also negative implications of these discretionary actions, such as increased difficulty getting client adherence to RTW timeframes, and a lack of accountability for poor adherence to RTW programmes. However, the negative perception of vocational providers may be related to the impact this had on achieving their contractual RTW timeframes.

Overall, business continued as usual, discretionary differences did occur with new and existing ACC clients and these may have been influenced by the difference in the goals and expectations of the injured clients, the NZ public and the empathy of the case managers, support coordinators and other contracted staff.

7.3.4 Building relationships

Good relationships were considered vital to facilitate RTW by all the participant groups. The ACC participants described themselves as coordinators of the RTW processes, and felt they could not do this effectively without building relationships with their client and the vocational provider. “It really is about establishing what’s going to work best for the client and the co-ordinator together so it’s some of that partnership stuff.” Participant K (ACC)

The ACC participants described themselves as best placed to make the entitlement decisions because of their knowledge and understanding of the client. ACC participants felt they had more accurate information to base decisions on where communication with the client was good and information flowed well.

ACC were considered by the vocational and injured participants to hold the most power in the relationships and control the decisions, Participant C (Vocational) described: “the
case manager is the boss, to a huge extent, because they’re the ones that have got the money and pull the strings.” Although ACC participants implied the injured earthquake survivors had control and could choose their own RTW providers, because the vocational providers had to be ACC accredited, and the injured participants described this decision as difficult because they, “didn’t know who did what” and felt making the choice was, “just a punt as to whose good for you and who’s not” Jim (Interview 1). In reality, the ACC participants appeared to assist in the decision of which vocational provider was used. The ACC participants reported the choice of vocational providers was often based on availability. However, the vocational providers felt they were more likely to get referrals if they had a good relationship with the ACC staff and they explained that good relationships fostered mutual trust.

7.3.4.1 Relationship with the client
The success in building relationships seemed related to how included the injured participant was in the decision-making processes about entitlements. ACC participants described using a person-centred approach with the injured earthquake survivors; this was expanded by Participant F (ACC):

Person-centred planning, I guess. It’s, it’s about making sure that they’re well informed of what is happening on a regular basis. That’s the key. So they need to be aware of their needs, of, it’s about making sure that they’re aware of who we’re talking to, what we’re talking about, bring them together and client meetings, and that sort of thing. It’s just keeping the communication up to make sure that they’re happy with where they’re tracking and why, really.

The ACC participants described the need for good communication so their clients were aware of what was happening, and it seemed the ACC ‘processes’ were central rather than the clients. Participant K (ACC) felt it was possible to be client-centred, but that ACC hadn’t quite achieved it yet. She believed it was important to be clear with clients what ACC could provide and to discuss entitlements openly. She explained:

It can be challenging to remain person-centred throughout that but I think if we are being open and transparent with our clients, if we are being really clear about what the expectations look like from both sides, so that we are working with our clients to achieve their goals but also talking to them about what their responsibilities might be while in receipt of weekly compensation or entitlements from ACC, then actually you can maintain that person-centred platform. Participant K (ACC)
The injured participants did not feel they were the centre of the approach. They felt ACC’s focus was fiscal rather than client-centred. Taylor (Interview 2) described: “[It’s] more about the dollar than the people”. Similarly, Evelyn (Interview 2) felt ACC were more concerned with ticking the right boxes than considering her needs, she explained her view on ACC’s client centred approach:

*I think it’s bollocks. I don’t think they do. It’s just what they say they do. It’s like all these places, they have a mission statement or whatever and it’s about client-centred care, really... I guess you’d just have to know how to work the system if you were trying to either get something that you were entitled to that you don’t know about because how would you know about it if someone hasn’t told you, you don’t.*

Polly (Interview 2) described her experience of goal setting with ACC. She was not employed prior to her injury but had subsequently investigated and enrolled in a jewellery making course through a local college. When she approached ACC for financial assistance for this she was told there was no support available to help her pursue this. However, once Polly was enrolled in the class ACC added finishing her course to her ACC goals during a routine review. She described:

*The next time I had my six month goal setting (ACC suggested) my six-month goal might be completing the jewellery course or doing something. And it’s like all these other people have come in and sort of tried to stamp some sort of connection like they’ve been involved with this process ... And I thought, “You had nothing to do with me finding this course or doing this course. And you were pretty clear, pretty adamant that there would be no financial contribution because it was a hobby and I was a non-working person.”*

This could perhaps be considered as embracing client-centred goal setting; however, as this goal was added retrospectively and ACC had not supported the process from the beginning, it only served to anger Polly.

As described previously (Section 7.2.1), the relationship between the ACC staff and the injured participants was influenced by the personalities of both parties. The negotiating style of the injured participant appeared to influence their perception of client centred care. The active negotiators were more likely to have their own goals that they wanted to be incorporated into RTW and so were more likely to push for a client-centred approach, while the passive negotiators seemed happier to follow the ‘goals’ determined by ACC. This appeared to influence how the ACC staff included the injured participants in RTW decisions.
The vocational providers held a unique position as they worked for two stakeholders with different needs. They were contracted by ACC to provide vocational services, yet effectively worked for the injured participants, assisting with their RTW. The vocational providers held a ‘Fee for Service’ contract with ACC, which provided a financial incentive to get the injured earthquake survivors back to work quickly. They had prescribed RTW timeframes to adhere to and felt that only, “if you do it efficiently, you can make money out of it” Participant C (Vocational), giving them a possible financial incentive to get people back to work as quickly as possible.

Many of the vocational participants were experienced health professionals and considered their professional knowledge of the client’s condition assisted decision making around the client’s capability and speed of RTW. One issue the vocational participants identified was their lack of input into the RTW timeframes, which were based on medical assessments carried out by someone else. They felt the time frames they were given for the RTW of the injured participants were often unrealistic, based on the injuries and not taking into account the person’s job or other circumstances. This placed additional pressure on them to achieve the contractual targets set by ACC.

The referral levels come to us on the basis of an expected return to work time frame and if your client’s outside that time frame, it can be one of two things. Either, just accept you’re not going to meet your KPI [key performance indicators] or ask ACC to upgrade that referral level to accommodate a bigger, a longer time frame. Participant E (Vocational)

The conflicting interests of the vocational practitioners were viewed cynically by the ‘active negotiators’ who were sceptical about whose interests were being met. Many of the injured participants perceived the ACC and vocational staff received bonuses for getting them back to work. Grace (Interview 1) commented: “Are they interested in you as a client, and an injured person or are they interested in getting their big fat bonus because they get you back to work after six months?”

In contrast, Susan (Interview 2) had worked with two different vocational providers and felt the vocational provider was neutral and generally working for her best interests. However, she felt one of the vocational practitioners took advantage of her situation in order to maximise their profits. She described:

But like some people, like when I first got out of hospital, the first rehab people, they wanted to spend so many hours a week with me. It was like, to me, it felt like they were
only spending time with me so they could get more money from ACC. It was like I was a money-making thing but no, she’s definitely neutral. And most of the people I’ve got, yeah, all the people I have now are pretty much like that. They actually work for ACC, contracted to ACC but they more work with you and for you, so. Which is what they should be anyway.

It appeared the roles of ACC and the vocational practitioner had considerable overlap, with both ACC and vocational participants defining their role as the RTW coordinator. Some vocational participants felt the information and the frequency of updates they provided to the employers on their earthquake injured employees was better than usual. “We were updating them typically, weekly, whereas sometimes it’s three-weekly, monthly” Participant B (Vocational)

In addition, the changed work environment, the need to find new premises and relocation of many businesses created the need for increased communication between the participant groups. Consequently, the employers wanted to be informed on progress targets and discharge dates so they could effectively plan RTW of the injured participant. Participant C (Vocational) described many businesses were working from, “temporary areas and constantly changing” so the employer could not always physically accommodate the injured employee back at work within the temporary accommodation.

This situation was unique to the earthquake, and a few workplaces had to deal with multiple injured staff returning to work on top of relocating the workplace. In these cases ACC tried to maintain consistency by using a single vocational practitioner for all the injured survivors within the same workplace, possibly to reduce significant repetition for the employer.

In summary, the ACC RTW processes did not change after the earthquake to accommodate the needs of the injured participants and proceeded in a similar manner to normal. ACC staff acted as ‘gatekeepers’ to the system and determined the entitlements of the injured earthquake survivors. The difficulties experienced during the RTW process were, in part, due to differences in the goals and exceptions of RTW held by the different stakeholders. How the injured person negotiated their personal RTW journey affected how they operated within the system, with differences dependent on the personality of the injured client, whether they were an active or passive negotiator, and how the ACC staff included them in the decision making process.
7.4 The earthquake experience

There were unique impacts on RTW after an earthquake injury compared to a traumatic injury. While the earthquake caused the injury it also had an influence on all stages of the RTW process. The influence of the earthquake was immediate, and the injured participants communicated dramatic stories of their earthquake experience (Van Beynen, 2012). Many of the injured participants were trapped in buildings for hours, unable to move, in pain, and uncertain if they would make it out alive. The recollections of the events were pieced together from their own experience combined with stories from rescuers, media, co-workers, friends and family. Alexis (Interview 1) had only second hand memories of her earthquake experience where she was injured with her daughter.

I don’t remember a week before the earthquake and no clear vivid memories until about five, five and a half weeks afterwards. Took ten men to lift the stuff off us. My daughter was underneath me. They pulled her out, she wasn’t breathing but they got her breathing again and she was, one of the young guys, carried her in his arms. Somebody else held her neck. She was the first person that got to hospital. St John checked me and believed that, I was pronounced dead at the scene. So I was covered by a builder’s blanket where I lay for over two hours. A young construction worker walked past and saw my feet were sticking out from underneath the blanket, saw my foot twitch and got a Territorial Army medic to check me who then said, “She’s not dead.” They shifted me to a park bench and I was taken by ambulance to the hospital and one of the doctors said if I’d been there another 20 minutes I wouldn’t be here today.

All injured participants received their initial emergency care at Christchurch Hospital. Only Nicola and Grace were transferred out of Christchurch for ICU care, but returned to Christchurch for rehabilitation. All the injured participants completed their rehabilitation in Christchurch. The events of the earthquake meant many of them felt they had experienced more than an accident. Evelyn (Interview 1) described it as a, “Disaster.”

Even though accidents are accidents and no one goes looking for them. I think I was doing something so ordinary, just walking down the street, you know, it wasn’t as if I was crossing the road, or in a car, or anything. I was just doing what you do, just walking down the street and suddenly, just a disaster.

The high profile of the earthquake created interest in NZ and across the world; this gave the injured participants notoriety and access to political figures.
The injured participants faced not only physical and psychological effects from their injury but also changes to their homes and the city they lived in. The effects of the earthquake disrupted the physical, social and economic environment of their RTW journey. “For people that have been affected by the quake that have ... It’s changed their whole - the way they live and the way they react to things.” Lillian (Interview 1)

The large scale destruction of the earthquake impacted the lives of the thousands of people who lived in Christchurch. However, the impacts on RTW in the post-earthquake environment were not all negative. The shared experience of the earthquake provided a positive impact on RTW, manifested in a heightened empathy for the injured participants.

The three sub categories of the earthquake factor are described in detail next: feeling safe; interacting with the media and the shared understanding of the earthquake.

7.4.1 Feeling safe

The first issue identified by the injured participants in light of their earthquake experiences was the importance of feeling safe. Christchurch experienced thousands of aftershocks from the February earthquake, over 10,000 by the time of the second interview. These caused considerable anxiety for many of the injured participants, who recalled their initial struggle to feel safe. They described how each aftershock was a reminder of the February 22nd earthquake, and every new tremor triggered a reaction as they anticipated how significant the event it could be. Peggy (Interview 1), who was unable to RTW because of the emotional impact of the earthquake, described the impact the earthquake had on her:

*I think the earthquake; the impact of the earthquake is that it is so totally out of my control. I, all of our control but I’m personalising it. You know, a car accident, I guess you could say, “Well, you know.” You can say, “I’m not going to drive a car again,” or whatever. You’ve got some choices. With the earthquake, there are no choices. You know, and it’s that, it’s the overwhelming nature of it and the absolute awareness that another one could happen at any time and I have no control over that whatsoever.*

The injured participants with mobility restrictions, especially those reliant on wheelchairs (Taylor, Susan, Polly, Evelyn and Nicola) expressed concern about how they could escape another earthquake, given they were unable to escape the initial earthquake when they were able to walk. Susan, Taylor and Sebastian recalled even though they followed the recommended actions in the earthquake (‘drop cover hold’
recommended by NZ Civil Defence) and took cover under their desks, they were still injured, and had witnessed the death of co-workers who had also done the ‘right thing’.

Injured participants described how they avoided areas they felt were dangerous; either where they had been injured themselves or they felt were risky such as built up areas, shopping malls and the city centre. This avoidance of particular areas had an impact on RTW especially if the relocated workplace was close to, or in, an area the injured participant was trying to avoid.

Many of the buildings that collapsed in the February 2011 earthquake suffered initial damage in the Darfield earthquake (Section 2.2). Although they had been checked for structural damage and declared safe, the injured participants reported that between the Darfield and Christchurch earthquakes they felt concerned working in the buildings, as they were not convinced the buildings were safe. Many injured participants expressed anger at the lack of appropriate systems to check the structural safety of the buildings. They felt if adequate assessments had been done, then the buildings would not have been cleared for use and they may not have been injured. The participants injured in these buildings described feeling betrayed by either their managers or the engineers responsible for checking the building. Peggy (Interview 1), who was injured when her workplace collapsed, had not returned to work after the earthquake. She recalled that her team at work were reassured their building was safe by her manager and the building owner. She was angry that it had subsequently collapsed in the February earthquake.

So there’s anger that we did not know the vulnerability of that building and you know - So, I, I’m kind of accepting of it but I can’t, because I survived, but I can’t imagine how that is for the families of those people who died. To know that this possibly was avoidable.

Taylor (Interview 1), who had also not returned to work, believed the engineers who assessed the building to be safe should shoulder the blame.

I kind of blame the people that were supposed to be checking the building because of the significant damage that was done to one of the corners that structure[urally] weakened the building and that’s what they say the collapse was from. And in listening to all the evidence, it was all pass the buck or, “They said this, they said this.” Obviously, nobody can guess or know what’s going to happen but that building, September, we weren’t in there for a month or something, I remember because it was
red stickered. Then we got back into it and then, because I was on my leave. And then I remember another time it happened, it must have been still in the holidays, it got red stickered again. So they didn’t fix anything. We would freak out and be like, “Oh my God.” You know. “What the fuck, is the building safe? What’s happening to the building?” We’d get emails sent out saying, “Oh, we’ve had the check. You know, its fine.” A few minutes afterwards, well, we see the building people coming through checking. Well, they haven’t finished. And all they did was look. I mean, you know. And they had strops out the front holding the big beams together like, come on.

Many businesses relocated either temporarily or permanently after the earthquake because of building damage or collapse in the earthquake. Before the injured participants could consider returning to work, even if they had not been injured in the workplace, they wanted to know that their workplaces were safe. Alexis (Interview 1) explained:

I don’t like them so much at work [aftershocks]. It’s in the office. I don’t like the noise it makes in the office and things. I know I’m safe. It was one of the first buildings in Christchurch to be 100% earthquake code compliant so I know I’m in a good place but it still doesn’t mean that I’m happy about it.

Because of their previous experiences with building collapse Hailey, Samantha, Susan, and Taylor were wary of moving into new buildings. Taylor was injured in the collapse of her workplace and sustained serious injuries. Her workplace had relocated but she did not trust the information she was given about the new building’s safety. This anxiety about working in a safe building appeared to be underestimated by some vocational practitioners. Taylor’s support worker organised for an occupational therapist to carry out a workplace assessment to see if the new building would be accessible for Taylor to RTW. However Taylor expressed there was, “no way” she was going back into the building even if it was accessible because she did not think it was safe:

... there’s a building in town which, F off, there’s no way I’m going into because it’s right backing onto where the old building was and it was the same people that built it, that were supposed to be looking after the other building so ... If you want to go and die, go to that building.

Samantha had also been injured at her workplace and described difficulty returning to her place of work even though it had relocated from the city centre to an industrial area.

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6 given a red sticker notice under section 124 of the Building Act, which restricts access to the building because it is unsafe.
She described the new building was adjacent to a warehouse that operated forklift trucks and every time the forklifts passed the building the floor shook making her think there was another aftershock. She constantly felt anxious and unable to concentrate. In addition, the new workplace was further away from her home; this was an added concern as she was worried she would not make it home safely if there was another earthquake. In contrast, Jim and Nicola, who were not injured at work, returned to their undamaged pre-earthquake work location without any problems.

In summary, the injured earthquake survivors needed to feel safe in their workplace; this was complicated by continual aftershocks and the relocation of workplaces. Being told the workplace was safe was little comfort for people who had been injured in buildings that had been declared safe but had collapsed anyway. Some of the vocational professionals appeared to underestimate the ongoing anxiety the injured participants were experiencing.

### 7.4.2 Interacting with the media

The second issue of particular relevance to the earthquake experience was the high attention of the media in the process. The earthquake caught the media’s attention and the injured participants described being pursued by journalists, which developed into a love/hate relationship with the media. In the early post-injury phase, many of the participants recalled they happily gave interviews from the hospital but they were grateful for the hospital media liaison who acted as a buffer between them and the media. However, even with this protection in place, injured participants described frustration from constant media calls, with some journalists even contacting other patients in the hospital to try and get access to them. These actions transformed many of the injured participants’ relationship with the media. Evelyn and Susan described bad experiences where inaccurate information was printed about them. Some injured participants found the media to be insensitive; publishing harrowing visual evidence of events they had no memory of – which was very distressing. Peggy (Interview 1) described her reaction to seeing photos of herself taken shortly after the earthquake:

> ...the [newspaper] did an earthquake sort of supplement publication and I had not really looked at the photographs that had been taken in those first hours. I hadn’t really wanted to but I was home by then and I. Somebody came into my house and they plonked this Star supplement down and said, “Oh, you’re a cover girl,” or something. It was a silly, insensitive thing that this particular person said and plonked this thing
and my photograph in that, you know when I was just being carried off the building, was on the front page. And I vomited. It was a terrifically interesting reaction. But I looked at the photograph and just went whoompf so that the psychological impact of that and the Star hadn’t contacted me to say. I mean it was their photograph, they didn’t actually have to. But they didn’t ring me to say, “We’re going to use your photograph on the cover of the supplement. Just be prepared.” So I wasn’t prepared and I did speak to somebody about that and they said, “Yeah, we didn’t sort of think that far ahead.” So, it was just the way it happened.

Some injured participants described manipulating the media notoriety to their advantage by using veiled or explicit threats of getting their story published to exert pressure on funders to influence decisions they perceived were not going their way. For example, Sebastian’s physiotherapist had recommended an extension of his physiotherapy programme which was refused by his ACC case manager. He believed ACC reversed this decision when he threatened to go to the media.

_I guess one of the benefits of all this was that there was quite a lot of press coverage and so, and also interest from politicians, you know, visits and things like that. So I just made comment that it would only take a couple of phone calls for it to be a bit of a bee in their [ACC] bonnet. And then I got action._ Sebastian (Interview 1)

In contrast, some injured participants, such as Susan and Taylor, had not used the media to assist their personal circumstances but felt that it might provide them with leverage, if needed, in the future. “You know, I haven’t had to go to the media yet about ACC but if one day, if something happens and they don’t come to the party, or something, then I will. I’ve always got that up my sleeve.” Taylor (Interview 2)

This additional pressure of possible media exposure was described by the ACC participants who were aware of the national interest in the story, and felt that they could possibly be portrayed in a bad light, as Participant D (ACC) explained:

_I think it does make you aware and as a co-ordinator, you’re aware that the media may play an influence and I suppose it’s, you know - You think about what impact your decisions are making on anybody, but I suppose you’re always aware of the media involvement and that that could possibly be an avenue for somebody to go down if they wanted to. Probably the access to that is a lot easier than somebody who hasn’t been through the earthquake._

The vocational participants indicated that this pressure on ACC may have generated some leeway in the RTW system such as relaxing RTW deadlines:
Whether it was the worry of bad press. I don’t know. You wouldn’t want to look like you were pushing people off the system after the earthquake. No one ever said any of those things but there were a couple of clients who took an extraordinarily long time to get back to a job that would ordinarily be manageable with their injuries. Participant E (Vocational)

In summary, the media appeared to impact indirectly on RTW. First, through creating increased emotional anxiety for the injured participants and secondly, through actual and potential threats made by the injured participants.

The third influence on RTW created by the earthquake experience was increased empathy from the shared experience of the earthquake towards the injured participants. The increased levels of empathy were apparent from vocational and ACC participants in the RTW process, as well as through increased flexibility and understanding from employers and co-workers within the workplace. Although supportive employers are not uncommon in the RTW process for injured employees, the vocational and ACC participants described the support seen following the earthquake as over and above what they usually experienced.

I also think there was no pressure from employers. Normally there is an expectation from employers that people hustle to get back to work or they need them back at work. I found, generally speaking, particularly in the first year, employers were very happy to let people take their time. There was much less pressure. Participant E (Vocational)

Neither Evelyn nor Jim were injured in their workplace and considered their employers were understanding in the RTW process, and felt they possibly had some empathy because of the earthquake.

If they value you, they will go that extra distance. But it’s a good question about the earthquake. I suspect there was perhaps a degree of more understanding because of the way it had happened. If I’d been drunk and driving home one night and had an accident, probably not. That might have been quite a different outcome. I think you’re right. The earthquake was a particular - because everybody understood what happened and how awful it was. But I can’t say that because there are other examples of other people having been treated really well that had accidents. Evelyn (Interview 2)

This mixture of empathy appeared more pronounced if the earthquake injury occurred at the workplace. Alongside the empathy Susan described the “survivor guilt” of employers and co-workers trapped alongside her in the earthquake, but not injured. It
appeared that because they were trapped themselves co-workers shared similar experiences of the earthquake and were aware just how close they had come to being injured, or felt guilty that they were uninjured or survived while other co-workers were injured or died. These work environments seemed to provide more flexible RTW conditions for the injured survivors. In this situation injured participants described how they could choose their hours and speed of RTW and felt supported by co-workers who assisted them with tasks they were struggling with. Interestingly, Hailey (Interview 1), a less injured participant, described experiencing survivor guilt when she returned to her workplace that had many injured survivors and some fatalities during the earthquake.

*It was really hard. People had died. I felt very guilty. I felt very, I got out, why didn’t they? I had a lot of guilt for ages. It was really hard just thinking these young people; and I’ve had my life. And I know it sounds, but they’d been babies just starting their lives and at least I’d had something. You know? And I just felt very guilty, very depressed about it. And I still do. If a family member came in, I’d just start to cry. It’s really hard. They’re all lovely people, very good people.*

In some cases the shared experience of the earthquake created a positive team environment; this appeared more noticeable when the injured participants’ workplaces were relocated and where work co-workers had also been trapped. Hailey and Sebastian were both less injured participants who returned to a new work location not long after their uninjured co-workers. They felt a new workplace environment was established collectively and they felt positively welcomed back, with the shared experience uniting them as a team. Samantha was also one of the less injured participants returning to a relocated workplace but she was the only person at her workplace who was trapped in the earthquake. She did not feel that the earthquake had united them as a team.

Sebastian and Samantha, who were both injured at work, described their employers had gone above what was expected of them and topped up their ACC payments so they were still receiving 100% of their previous wage. In addition Samantha’s employer even provided some home help for her when ACC refused. She explained:

*They had quite a few redundancies after the earthquake so one of the girls that was made redundant, she wanted to go into care of the elderly so they (her employer) paid her wages for three weeks and she came here for two hours a day to do the housework and to keep me company and that sort of thing. Samantha (Interview 1)*
Only Nicola and Jim returned to the same physical work location. Nicola returned to a workplace with minimal damage, where no one else had been injured, so the only disruption other staff encountered were the changes made specifically to accommodate her. Nicola’s RTW experience appeared to be less accommodating than others. She described less flexibility in her working hours than other injured participants and her co-workers appeared unwilling to assist with tasks she was unable to do.

The injured participants expressed their appreciation at having ACC case managers or support coordinators and vocational professionals who had a shared experience of the earthquake; and felt they were able to understand their concerns. All the injured participants initially stayed in Christchurch and many did not fully comprehend the positive influence of the shared experience until they left Christchurch. For example, Peggy (Interview 1) described leaving Christchurch temporarily for a break soon after her discharge from the hospital and found the experience less therapeutic than she imagined. Although being away from Christchurch meant there were no aftershocks to deal with, she felt the people around her did not have the same understanding as the Christchurch residents.

*When I could actually fly, I went to Auckland for a month and I absolutely hated it. I thought, and everyone thought I was going to just go, “Ah, I’m in a lovely calm place.” But I was totally dislocated and separated from the people who actually get it, who understand what’s going on. So those wonderfully helpful people that I was with in Auckland, they were almost over the earthquake. And that was only the first year. I needed to be in this environment [in Christchurch] with people who understood what I was going through because they were going through it too. And it was it was a very odd place to be because on the one hand, logically, it should have been really therapeutic but, in fact, it wasn’t.*

Interestingly, although Participant E had been in Christchurch for the earthquakes, she felt less able to relate to the injury experience of her earthquake injured clients.

*I think you can, to some degree, relate to someone slipping over and hurting themselves or something bumping them on the head from home or something. You can kind of identify with those sorts of injuries. But I found it was really hard to identify with the people who had had the trapped-in-the-workplace type experience for many hours. And I didn’t really know how to help that aspect of their recovery. Participant E (Vocational)*

In summary, the earthquake produced unique factors which both positively and negatively influenced the RTW of the injured participants. The earthquake factor was
more prominent in the immediate post injury period but it influenced all aspects of the injured participants’ RTW journey.

### 7.5 Conclusions

This chapter described in detail the four categories that underpin the development of a model of RTW after earthquake injury. They were: RTW as a goal and outcome within rebuilding a normal life; the journey taken to negotiate RTW; the RTW process and the system of RTW in the NZ context; as well as the differences in the RTW experience that were specific to the earthquake. Although the process of RTW in many ways was consistent with that for people with traumatic injury, the earthquake environment provided a unique RTW experience for the injured participants. The barriers to RTW from the earthquake included the emotional recovery from the earthquake and the injured participants’ need to feel safe in the continuing aftershocks, as well as the heightened expectations of the injured participants. The facilitator was the shared experience of the earthquake that created increased empathy for the injured participants and facilitated increased flexibility in the RTW process. In addition, peer support from other injured earthquake survivors provided emotional and practical support. These four categories have different impacts and interactions at different phases of RTW. The next chapter describes the integration and intersection of these categories and describes their interactions at different stages of RTW within the theory of RTW after earthquake injury.
8 Integrating the findings – the theory

This chapter describes the relationships and connections between the four categories presented in the previous chapter. This analysis proposes a theory of RTW for the injured earthquake survivors after the Christchurch earthquake. The major components of this theory, the four key categories, contain internal influences as well as external synergistic relationships with each other. The four categories interacted differently at each stage of RTW: (1) planning and preparing for work RTW; (2) achieving work; and (3) maintaining work. RTW was identified as a goal, a process and a system by different participants; they each held different perspectives and motivations for RTW and, therefore, measured the success of work in different ways.

Although the participants strived to rebuild normality they all held different perceptions of normal. Through the process of recovery, participants slowly built a new perception of normality which was different from the pre-earthquake normal they remembered. Negotiating the RTW journey (the process of RTW) for the injured participants was impacted by the ACC system. A unique factor which impacted RTW for the injured participants (compared to people sustaining trauma) was the altered environment as a result of the earthquake.

The visual representation of the theory of negotiating RTW after earthquake injury is presented first in Figure 8.1. Next, the interactions within the individual categories are described followed by the explanation of the interactions between the four categories at each of the three different stages of RTW. Finally, I will describe RTW for the injured participants with the ICF framework. While some literature is included in this chapter, the following chapter will discuss the findings in relation to key literature on the topic.

The theory starts with the experience of the earthquake. The earthquake was the cause of the injury, but also changed the environment the participants lived in. The effects of the earthquake were evident throughout the journey, and impacted the entire RTW process. The injured participants initiated attempts to rebuild normality soon after injury and this was central to their RTW.
The earthquake experience

Figure 8.1 The model of negotiating return to work after earthquake injury

The participants’ focus moved between the different steps of recovery progressing first through the physical and then emotional recovery. Work was not the final goal for the injured participant, but rather was used as a building block between emotional recovery and the final step of recovery, which was *getting on with life*, or normality.

The RTW process, or journey was not the only journey of ‘recovery’ that the person needed to pursue but it ran in parallel with other recovery processes and intersected with them in multiple ways. The RTW journey started just after injury, with planning work, and continued through achieving work and maintaining work. The RTW journey was in many ways determined by the ACC system. The system influenced each stage of RTW. RTW appeared to be the main goal for ACC. However, the goal for the injured participants was the final step of recovery, *getting on with life*, in a new normal. Achieving a new normal was an enduring process, and had not been reached by many of the injured participants - even three years after injury.
8.1 The influences within ‘rebuilding normality’

RTW for the injured participants could not be considered separately from injury recovery. Injured participants considered work as a part of a normal life, and it appeared to be used as a building block towards rebuilding normality. From the results of this study, rebuilding normality was a complex process that included physical and emotional recovery and, finally, getting on with life. Recovery involved a generally sequential shift of focus over these three steps aiming towards the goal of returning to normal. The first focus participants typically described in the recovery process was that of physical recovery. This initial focus started with hospital rehabilitation and continued once the injured participant was back in the community. Although the focus moved from physical recovery many of the injured participants continued to exercise to maintain their physical abilities. Emotional recovery was the second focus, which involved the psychological recovery from both the earthquake experience and the injury, coming to terms with the implications of the impairments or disability and re-establishing their identity. The analysis indicated the participants saw the final focus of recovery as being getting on with life, which typically occurred as they moved closer to realising their new normal. However, getting on with life was not a return to a pre-earthquake normal as the injured participants had anticipated, rather one which had been slowly redefined as they progressed through their recovery. All injured participants appeared to focus on the steps of recovery in the same order. The steps were not always distinct, as each one was not necessarily complete before the focus moved to the next. The steps of recovery therefore overlapped sequentially, but also cumulatively, until the injured participant reached the new normal. Normality was not a static end point but each day, a challenge, or change in emotional or physical recovery, assisted the participants in redefining their normal.

Speed of progression through the steps of recovery appeared to be largely determined by severity and type of injury. People with more severe injuries appeared to progress more slowly; thus, for the severely injured participants the physical recovery dominated the first year; whereas, for the less severely injured participants, physical recovery tended to be quicker and so their focus had moved onto emotional recovery by the end of the first year. The type of injury also appeared to influence the speed of recovery. The injured participants were guided by their health professionals for time frames for recovery. Participants with neurological injuries perceived a two-year time frame for
recovery had been given by the medical professionals during their hospital stay and so they expected to focus on physical recovery for the first two years.

Emotional recovery from the earthquake appeared to be related to the earthquake experience and the types and level of support the injured participant received. Earthquake emotional recovery was described as “challenging” because of the ongoing aftershocks, which acted as triggers to the emotional response and were constant reminders of the earthquake. In this stage of recovery the severity of the injury seemed less important, although the visibility of the injury was relevant.

Emotional recovery from the earthquake appeared to be a focus for longer in the less severely injured participants. One possible explanation for this was they spent less time focused on physical impairments and progressed to emotional recovery faster, or they may have received different support as people perhaps underestimated their earthquake experience because their injuries were less visible. Dealing with the emotional recovery appeared faster for the injured participants who accessed a range of types of support, such as professional help, peer support and support from friends and family. Emotional support appeared the most helpful, but was often more difficult to access as many of the injured participants’ friends and family were dealing with their own emotional issues from the earthquake. Some participants actively sought out support whereas others waited until it was offered.

The amount of support for the injured participants decreased over time. It appeared family, friends and colleagues perceived acceptable timeframes for recovery, and expected the injured participants to be ‘over it’- often before the injured participants felt they were. The third year after recovery has been proposed to be the hardest for psychological recovery after a disaster (Gordon, 2013). Many of the injured participants were aware of this timeline and used it as a reference for their own emotional recovery; some benchmarked their progress against the other earthquake survivors.

In contrast, emotional recovery from the injury appeared slower for the severely injured participants who seemed to have the most difficulty adapting to their disability. They struggled to establish a new identity which incorporated their disability. One possible reason for this was their injuries impacted every aspect of their lives. A serious injury is more likely to have long term consequences across all domains of the ICF and unlike a
less serious injury, such as a single fracture, these limitations and restrictions may not resolve once the injury heals.

The injured participants initially had hope for recovery, anticipating a return to their pre-injury lives. Their perception of the level of physical recovery they would reach changed over time so they constantly rebuilt their ‘normal’ to incorporate their changing ideas of what this normality would be. The injured participants seemed to reach a point where they acknowledged to themselves that they would not return to the ‘normal’ they had anticipated. Those with neurological injuries (i.e. SCI) appeared to have the most difficulty acknowledging their physical recovery was not going to return to their pre-injury functioning; and they appeared to hold on to the hope for recovery for longer than those with orthopaedic injuries. In contrast, while the participants with lower limb amputations also had visible disabilities, they were more realistic about their physical recovery. However, they all appeared to have more difficulty adjusting to their altered physical appearance. This meant these seriously injured participants were slower moving forward to the final stage of recovery – getting on with life – and were more likely to get stuck, unable to sufficiently reconcile their emotional and physical recovery to be able to move forward.

When successful, work acted as a building block, creating a tipping point which moved the injured participants’ focus from these first two steps of recovery to the final step of getting on with life. For the injured participants to reach this tipping point they had to feel physically able to work. In addition, their emotional recovery needed to be sufficient so they felt safe in the workplace. They had to consider work as a worthwhile way to re-establish their identity, or be at the stage where they were ready to take the final step and start getting on with their lives. The importance placed on work as a building block to normality appeared influenced by the ‘value’ of work to the injured participants. Having a career rather than a job seemed to increase the importance placed on work, with injured participants who had careers giving the impression they were highly invested in the process. Consequently, participants were more likely to RTW if it fulfilled a sense of purpose or status rather than if work was something to fill their day, or just an income. Although work could be a building block to the final step of recovery getting on with life; those injured participants with high or seemingly unrealistic expectations of recovery seemed to have more difficulty moving their focus away from
physical recovery, and therefore gave preference to formal rehabilitation input when considering the balance between work and rehabilitation.

To be able to focus on *getting on with life*, many injured participants had to reframe their definition of normal. RTW appeared to help the injured participants with this reframing as they could appreciate they were still able accomplish many of the activities they were able to do prior to injury.

### 8.2 The influences within ‘negotiating the return to work journey’

The injured participants had to negotiate with multiple stakeholders during the RTW journey including: ACC, vocational and health professionals, their employees and colleagues, and family and friends. They also had to negotiate three stages of the RTW journey: (1) *planning and preparing for work*; (2) *achieving work*; and (3) *maintaining work*. *Planning and preparing for work* started soon after injury, ran in conjunction with the *steps of recovery* and finished as the injured participants commenced work.

The second stage, *achieving work* started once the participants returned to some part of their employment role. This stage aligned with using *work as a building block* to recovery. *Achieving work* continued until the injured participants reached their ACC assessed capacity for work. Initially, all the injured participants returned to work part-time and increased their hours on a graduated RTW programme (Accident Compensation Corporation, 2006). The final stage of RTW, *maintaining work*, was closely aligned with the final step recovery, *getting on with life*. At this stage of RTW the injured participants had achieved full time work hours or their work capacity. Some participants had not reached this point at the time of the second interview (three years post-injury).

Much of the RTW journey operated within the ACC system, which followed an established RTW process, starting with determining an injury based trajectory of RTW (see Section 8.3). However, a number of influences affected the experience of that journey. First, the style an injured participant used to negotiate RTW, whether they took an active role to direct the process or were more passive and followed the process. Secondly, the level of disclosure of their injury (*the disability iceberg*) appeared to link to the expectations of support from co-workers and employers, and what was actually
received. The more information disclosed about the injury the more realistic the work expectations from others seemed. Co-workers appeared more willing to support work accommodations if they understood why they were required. Thirdly, the amount and type of support provided to the injured participants from their family, friends, professionals and peers mattered enormously. Together, these influenced the injured participants’ balance of work within the context of their lives. Initially, the consideration was balancing work and rehabilitation, but as the injured participants progressed through the steps of recovery work was balanced with other aspects of their lives.

8.3 The influences of ‘operating within the system’

This category described the influence of the system and how this defined the injured participant’s RTW journey. There were four subcategories of the RTW system that had cyclic interactions with each other: (1) determining entitlements and holding the purse strings; (2) managing goals and expectations; (3) business as usual; and (4) building relationships. Determining entitlements and holding the purse strings described the role of ACC participants in interpreting the ACC legislation and deciding entitlements for the injured participants. However, the injured participants interpreted their entitlements in light of their own goals and expectations that were not always aligned with those of ACC. Managing these differences in goals and expectations around RTW were reported as challenging by ACC staff. ACC’s business as usual approach influenced the goals and expectations because many of the injured participants felt they were entitled to more than usual because they perceived their experience was more than an accident, it was a disaster. Finally, the relationship and communication between the participant groups appeared to either help or hinder the understanding of each other’s goals and expectations of RTW. Where a more client-centred approach was used, the injured earthquake survivors were able to establish their own goals, fully aware of whether they would be supported by ACC. Conversely, if the injured participants were not involved in planning or setting goals they were often disappointed to realise their personal goals were not actually supported by the ACC system.

Because the four subcategories operating within the system were interconnected, if one aspect of the system worked well it appeared to have positive repercussions in all other areas. Conversely, a lack of understanding or disappointment over an entitlement
decision seemed to risk negative relationships between the different participant groups, reducing the ability to achieve shared goals and expectations. If the relationship between ACC and the injured participants deteriorated, their interactions then appeared to become a battle, and injured participants seemed more likely to threaten to use the media.

Managing goals and expectations appeared to be a major influence in this category. Although ACC’s early RTW goals are based on the international literature, the injured participants had their own goals and expectations around the best time frame for them to RTW, which did not always align with ACC’s early RTW goals. The ACC participants described health, quality of life and social benefits of RTW for their injured clients, but also acknowledged there was an institutional goal of ACC to return the injured earthquake survivors to full time employment (30 hours), or to reach the assessed capacity for work in a timely manner. However, many of the injured participants did not share the same goals and expectations and, instead, felt ACC expectations of work capacity were unachievable. Many of the injured participants questioned ACC’s true motives in the RTW process, and perceived the real reason ACC promoted RTW was to get them off the system. The best way to facilitate shared meaning and, consequently, clear goals and closer expectations of RTW appeared to be through the use of clear language with defined definitions, using communication styles that suited both parties. However, the information needed repeating at different stages of the recovery process, as information given at times when the injured participants did not perceive it as relevant was not necessarily assimilated.

8.4 The influence of ‘the earthquake experience’

The earthquake experience described the earthquake-specific aspects which influenced RTW. The earthquake experience included the experience of the injury, such as being trapped in buildings or transferred out of the area for medical care, but also ongoing effects from the original earthquake and the many aftershocks. Feeling safe encompassed some of the emotional issues from the earthquake; predominantly the injured participant’s need to feel safe in the ongoing aftershocks and to have a safe work environment. Next, the interaction with the media was unique to the earthquake experience, as the Christchurch earthquake was the most significant earthquake in New Zealand since the 1931 Napier earthquake and it created national and international
interest. Finally, the greatest influence of the earthquake experience on RTW appeared to be the shared experience of the earthquake. This shared experience generated increased empathy for the injured participants, creating greater flexibility and understanding in the workplace that made both the RTW process and experience easier for the injured participants.

The most immediate effect of the earthquake was the injury to the participants, while later it created a ripple effect as the consequences of initial earthquake and the multiple aftershocks impacted along the RTW journey. The earthquake experience was influenced by the location of the injured participant during the earthquake, who they were with, whether they were trapped, the time until rescue, the assumed or stated safety of the building, whether they witnessed someone die, and if they remembered the experience. Those individuals who were at work, trapped in collapsed buildings, witnessed someone dying, and had a full memory of the event appeared to have a greater psychological impact from the earthquake. The injury severity itself did not appear to be relevant.

To attempt returning to work, the injured participants needed to feel safe in their workplace. The need to feel safe was more obvious in the female injured participants, but this could be because there were only a small number of male participants. The injured participants did not feel reassured simply by being told their building was safe, but felt safer in newer, single storey buildings or if buildings met the new earthquake building codes. A number of the less seriously injured survivors who had been trapped during the earthquake reported greater emotional/psychological reactions than those described by the severely injured, irrespective if they had been trapped during the earthquake.

The speed of progression through the stages of recovery also appeared to influence the injured participants’ need to feel safe, as those with a quicker physical recovery achieved RTW earlier. The quicker physical recovery meant participants were simultaneously dealing with returning to work and earthquake-related emotional recovery, while aftershocks were still occurring.

The earthquake experience influenced the injured participants’ interaction with the media. Those with the most serious injuries and/or the most dramatic experience seemed to be of more interest to the media. For example, the earthquake survivor
whose legs were amputated at the scene to enable their rescue received more media attention than the people who were injured in falls at home and had less serious injuries. The injured participants who did receive media attention had greater opportunity to use (or threaten to use) the media to try and impact ACC’s decision making, although not all of them did.

Not all the participants reported positive interactions with the media. Some injured participants were upset by the publication of distressing images of their rescue or injuries from the earthquake. Often the injured participants were unaware their image was going to be used until they saw themselves in print. The negative images of their injuries were described as impacting RTW, as they impacted on their emotional recovery from the earthquake and often increased the need to feel safe at work.

A more implicit impact of the earthquake was evidenced through the shared understanding of the earthquake experience. At a macro level there was a general empathy from all New Zealanders while, at a local level, there was empathy from the ACC and vocational participants, employers and co-workers involved in the RTW process. The empathy from employers and co-workers appeared to play a particularly important role on the RTW process for the injured participants, creating greater flexibility around RTW and increasing the emotional and physical support in the workplace. Empathy, or survivor guilt, from co-workers and employers was more evident where the injured participant was injured at work and had a visible injury. The overall earthquake impact on the workplace was important in determining the level of empathy the injured participant perceived they had received on returning to work. The highest levels of empathy seemed to result in workplaces where the building had collapsed, multiple people had been trapped and/or had died, and where the workplace had to be relocated. Co-workers and employers who were physically trapped in the earthquake with the injured participants seemed to be empathetic for longer than those who were not trapped. Other factors that appeared to affect the support received in the workplace were the role the returning injured participants had with the workplace, the social responsibility of the employer, the personality of the injured person and how the injured person’s role had been covered in their absence. Where an injured participant had a management or a specialist role within the company, it appeared easier for them to reintegrate back into the workplace. RTW appeared harder when co-workers were dependent on the injured participants to carry out their own work. Workplaces
described as ‘socially responsible’ by the injured participants seemed more supportive of injured employees returning. In addition, RTW appeared smoother if the co-worker who had covered the absentees’ role was happy to step back and let the injured participant resume their responsibilities.

8.5 Changing influences - the different stages of return to work

This research showed that RTW for injured participants was a complex process involving the interaction of multiple stakeholders. The different stages of RTW: (1) planning and preparing for RTW; (2) achieving work; and (3) maintaining work were influenced by different aspects from each of the four categories. These acted as either barriers or facilitators to the RTW process. These overall interactions of the categories on RTW were too complicated to illustrate with the diagrammatic form of the theory (Figure 8.1), so they are presented in a series of tables starting with Table 8.1.

A number of influences seemed to impact all stages of RTW. First, the reason to work was important in the planning and preparation stage of RTW and also contributed to the participants’ balance between rehabilitation and RTW. The injured participants appeared more likely to plan an earlier RTW if they were returning for work status or financial reasons rather than for something to fill their day. During the achieving and maintaining work phases the injured participants appeared more likely to achieve their work capacity and maintain work if their reasons to RTW were realised.

Secondly, the alignment of goals and expectations of RTW between the injured participants and the other participant groups appeared to facilitate all stages of RTW. Using a client-centred approach and involving the injured participants in RTW typically facilitated this. As the injured participants moved to the achieving work and maintaining work stages of RTW, alignment of the goals was important so the injured participants could balance work with other aspects of their lives. Clear goals and expectations of the anticipated working capacity appeared to be important facilitators so the injured participants and ACC were in agreement about what hours of RTW were expected.
<table>
<thead>
<tr>
<th>Category</th>
<th>Planning work</th>
<th>Achieving work</th>
<th>Maintaining work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebuilding normality (Section 7.1)</td>
<td><strong>Reason for RTW</strong></td>
<td><strong>Reason for RTW</strong></td>
<td><strong>Reason for RTW</strong></td>
</tr>
<tr>
<td></td>
<td>Speed of recovery</td>
<td>Job Satisfaction</td>
<td>Re-evaluate work situation</td>
</tr>
<tr>
<td></td>
<td>Type of work</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family role</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negotiating the RTW journey (Section 7.2)</td>
<td><strong>Negotiation style</strong></td>
<td><strong>Negotiation style</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disclosure – understanding of colleagues</td>
<td>Disclosure – understanding of colleagues</td>
<td>Life priorities (work life balance)</td>
</tr>
<tr>
<td></td>
<td>Positive support from health professionals</td>
<td>Benchmarking</td>
<td>Expectations and attitudes of colleagues</td>
</tr>
<tr>
<td></td>
<td>Modifiable job (work rehab balance)</td>
<td>Modifiable job (work rehab balance)</td>
<td>Family role</td>
</tr>
<tr>
<td></td>
<td>Team approach</td>
<td>Team approach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family role</td>
<td>Re-evaluate work situation</td>
<td></td>
</tr>
<tr>
<td>Operating within the system (Section 7.3)</td>
<td><strong>Shared goals and expectations</strong></td>
<td><strong>Shared goals and expectations</strong></td>
<td><strong>Shared goals and expectations</strong></td>
</tr>
<tr>
<td></td>
<td>Transport</td>
<td>Transport</td>
<td>ACC expectations - type of compensation – serious/non-serious injury</td>
</tr>
<tr>
<td></td>
<td>Type of compensation – serious/non-serious injury</td>
<td>Location of clients</td>
<td>Hours to capability match</td>
</tr>
<tr>
<td></td>
<td>Good relationships with ACC/Vocational</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vocational support</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Home environment / EQC repairs home modifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The earthquake experience (section 7.4)</td>
<td><strong>Empathy from ACC and Vocational providers</strong></td>
<td><strong>Understanding and empathy from colleagues</strong></td>
<td><strong>Understanding and empathy from colleagues</strong></td>
</tr>
<tr>
<td></td>
<td>Safe workplace</td>
<td>Safe workplace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Place of injury</td>
<td>Flexible RTW options</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flexibility to accommodate rehab</td>
<td></td>
</tr>
</tbody>
</table>
Finally, the empathy of employers and co-workers seemed an important influence at every stage of RTW. The planning and preparation for work seemed more realistic if the employers and co-workers were empathetic and supportive of RTW and were happy to incorporate flexibility into the RTW plan. During the achieving work stage, empathy from employers and co-workers appeared to determine the physical and emotional support the injured participants received. Where empathy was high this could facilitate full capacity of work; however, if the empathy was low it could act as a barrier to the injured individual receiving the flexibility and support they needed to reach their work capacity. Therefore, ongoing empathy and support also influenced how sustainable work was in the maintenance stage of RTW.

In addition, the injured participants gave the impression that environmental stability was a facilitator of RTW so generally, they did not consider returning to work until they were back in a family environment. Also, having access to transport, preferably their own vehicle, which did not require them to rely on others’ help/support, was likely to speed up RTW for the injured participants. Although some of these issues are faced by anyone with a serious injury, there were additional environment issues for the earthquake injured participants.

Maintaining business was a priority in Christchurch after the earthquake for both employers and employees. The government stepped in to provide financial support for employers to assist with wage payments and loss of revenue. Other aspects of injured participants’ social lives, such as social clubs and churches, etc. were disrupted by the earthquake. However, these were not always re-established quickly, as they were not given the same priority as workplaces. RTW was perhaps perceived as more important for the participants than re-establishing social activities because it was more accessible. It was also one aspect of their life that could be controlled by the injured participants, making them feel useful, restoring their identity and providing routine to their lives.

The injured participants’ style of negotiating RTW influenced both the planning and preparation for work, and achieving work stages of RTW. The individuals with an active negotiation style tended to place greater emphasis on work status or have management, senior or specialist roles within the company; thus, giving them more power or influence in the RTW negotiations with their employer.
The influences which were specific to the individual stages of RTW will be discussed, starting with *planning and preparing for work*.

### 8.5.1 Planning and preparing for work

*Planning and preparing for work* started just after injury and finished as the participants’ commenced work. Table 8.2 shows the specific barriers and facilitators identified during this stage of RTW.

The injured participants based their work capabilities around their anticipated physical recovery and planned their work tasks around this. As a result, these estimated work capabilities were not always realistic. The types of job the injured participants were returning to was important when they were considering how to modify work hours, physical tasks and the environment. Management and non-physical work roles seemed easier to modify.

There appeared to be gender differences in the roles the injured participants held within the family unit; many of the women had mothering or caring roles as well as employment. The participants with children seemed to prioritise their children’s emotional recovery from the earthquake over their own recovery before they considered resuming paid work. Consequently, the working mothers were often slower to achieve RTW than injured participants who had no responsibilities in the family; for example, those who were living at home with their parents or just their spouse.

Typically, the participants’ RTW plans changed multiple times. The perceived benefits of work, the reasons to work, and the time and effort involved in work, had to be balanced with ongoing rehabilitation before the participants moved to *achieving work*.

The injured participants with an active negotiating style appeared to initiate *planning and preparing for work* earlier than the participants with a passive negotiation style. Planning appeared to be facilitated for the injured participants who had the support of a team of professionals who could provide realistic advice for planning RTW, including appropriate timeframes for RTW and the suggested progression of work hours.
<table>
<thead>
<tr>
<th>Category</th>
<th>Planning and preparing for work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Barrier</td>
</tr>
<tr>
<td>Rebuilding normality (Section 7.1)</td>
<td>Delayed/slower than expected</td>
</tr>
<tr>
<td></td>
<td>Primary care giver</td>
</tr>
<tr>
<td></td>
<td>Something to do, social,</td>
</tr>
<tr>
<td></td>
<td>Physical</td>
</tr>
<tr>
<td>Negotiating the RTW journey (Section 7.2)</td>
<td>Passive</td>
</tr>
<tr>
<td></td>
<td>Lack of support or health</td>
</tr>
<tr>
<td></td>
<td>professional who prioritises</td>
</tr>
<tr>
<td></td>
<td>rehabilitation over RTW</td>
</tr>
<tr>
<td></td>
<td>Lack of team cohesion</td>
</tr>
<tr>
<td></td>
<td>Not disclosing side effects or</td>
</tr>
<tr>
<td></td>
<td>implications of injury which</td>
</tr>
<tr>
<td></td>
<td>will effect work capability</td>
</tr>
<tr>
<td></td>
<td>understanding of colleagues</td>
</tr>
<tr>
<td>Operating within the system (Section 7.3)</td>
<td>Waiting for home modifications</td>
</tr>
<tr>
<td></td>
<td>No independent transport</td>
</tr>
<tr>
<td></td>
<td>Serious injury</td>
</tr>
<tr>
<td></td>
<td>Late, lack of understanding of</td>
</tr>
<tr>
<td></td>
<td>injury</td>
</tr>
<tr>
<td></td>
<td>Separate goals and different</td>
</tr>
<tr>
<td></td>
<td>expectations. No acknowledgement and help with non ACC goals</td>
</tr>
<tr>
<td></td>
<td>Poor relationships</td>
</tr>
<tr>
<td>The earthquake experience (Section 7.4)</td>
<td>Lack of empathy</td>
</tr>
<tr>
<td></td>
<td>Not in workplace</td>
</tr>
<tr>
<td></td>
<td>Little knowledge of new</td>
</tr>
<tr>
<td></td>
<td>environment, lack of trust</td>
</tr>
</tbody>
</table>
When the team was supportive and the health professionals were positive about the benefits of work, the injured participants appeared to have a better experience of planning their RTW and were themselves more likely to be positive about starting the next phase. In a supportive team environment the goals and expectations of the injured participants, ACC and vocational participants seemed to be more closely aligned.

There were indirect influences determined by ACC that facilitated RTW. These included home modifications and transportation. If these were completed then the injured participant was more likely to feel they were able to plan RTW. The disclosure of the injury appeared to be important in planning RTW. The employers and colleagues of the seriously injured participants seemed more likely to overestimate the injured participant’s RTW capabilities in planning how to adapt their job if the participant had not disclosed enough about their injury and ongoing issues. For example, there were often unspoken expectations based on the belief that someone with an SCI is just sitting down, without knowledge or awareness of the other effects or implications of the injury, such as fatigue and pain issues. In terms of the earthquake experience, many injured participants expressed a need to feel safe in their work environment, to feel it was an achievable objective. Participants who felt concerned that the workplace they were returning to was unsafe appeared less likely to progress past planning RTW. This appeared more likely to be an issue for the people who had experienced their injury in the workplace. The less injured participants seemed more likely to have their earthquake-related emotional recovery overlooked by vocational providers and co-workers thus underestimating the impact this could have on RTW.

### 8.5.2 Achieving work

For the majority of injured participants achieving work followed a typical graduated RTW programme. As their work hours increased the injured participants re-evaluated their RTW plan against the reality of the situation. At this stage of RTW rebuilding normality seemed to have less influence.

Table 8.3 shows the majority of positive impacts in this stage of RTW were the influence of the workplace. Flexibility from the workplace appeared to facilitate achieving work by allowing the injured participants to balance RTW and rehabilitation.
During this stage, the injured participants were more likely to have made their own assessment of the safety of the workplace, but some still needed external reassurance.

<table>
<thead>
<tr>
<th>Category</th>
<th>Achieving work</th>
<th>Influence</th>
<th>Facilitator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rebuilding normality (Section 7.1)</td>
<td>No longer justified – not achievable</td>
<td>Reason for RTW</td>
<td>Justified - achieved</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>Job Satisfaction</td>
<td>High</td>
</tr>
<tr>
<td>Negotiating the RTW journey (Section 7.2)</td>
<td>Difficulty modifying job</td>
<td>Modifiable job (work rehab balance)</td>
<td>Able to modify job</td>
</tr>
<tr>
<td></td>
<td>Poor match of anticipated and actual capacity, difficulty modifying job to match capacity</td>
<td>Re-evaluate work situation</td>
<td>Good match of anticipated and actual capacity</td>
</tr>
<tr>
<td></td>
<td>Not disclosing side effects or implications of injury</td>
<td>Disclosure</td>
<td>Disclosure of side effects or implications of injury</td>
</tr>
<tr>
<td>Passive</td>
<td></td>
<td>Negotiation style</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using others low hours as justification not to work more</td>
<td>Benchmarking</td>
<td>Trying to match other peoples RTW, or happy to be doing better than others</td>
<td></td>
</tr>
<tr>
<td>Lack of team cohesion</td>
<td></td>
<td>Team approach</td>
<td>Collaborative team</td>
</tr>
<tr>
<td>Operating within the system (Section 7.3)</td>
<td>Separate goals and different expectations. No acknowledgement and help with non ACC goals</td>
<td>Goals and expectations</td>
<td>Shared goals and expectations or acknowledgement and help with non ACC goals</td>
</tr>
<tr>
<td></td>
<td>Not client centred</td>
<td>Approach to clients</td>
<td>Client centred approach</td>
</tr>
<tr>
<td></td>
<td>No personal transport, reliant on other people or taxis.</td>
<td>Transport</td>
<td>Own transport</td>
</tr>
<tr>
<td>The earthquake experience (Section 7.4)</td>
<td>Little understanding from colleagues, empathy short lived or non-existent</td>
<td>Understanding and empathy from colleagues</td>
<td>Empathetic and understanding colleagues happy to help out and assist with tasks when required</td>
</tr>
<tr>
<td></td>
<td>Inflexible hours unable to attend rehab in work time</td>
<td>Flexibility of hours</td>
<td>Flexible hours able to attend rehab in work time</td>
</tr>
<tr>
<td></td>
<td>Feeling unsafe</td>
<td>Workplace</td>
<td>Feeling safe</td>
</tr>
<tr>
<td></td>
<td>Inflexible hours, not able to choose own working hours or having ridged increase of hours</td>
<td>Flexible RTW options</td>
<td>Flexible hours, able to choose own working hours or able to evaluate hours on a weekly basis</td>
</tr>
</tbody>
</table>
the building they were working in was safe. The disclosure of injury to employers and colleagues remained important. Where the injured participants fully disclosed their injury and ongoing issues there was a better understanding of the injury needs, which made them more likely to modify tasks and provide assistance for the injured participants as required.

Similar to the previous RTW stage, planning and preparing for work, a team approach appeared important. During achieving work the work-ability determined during planning and preparing for work was tested against the actual work situation.

As mentioned earlier, planning work was often completed while the injured participant was still completing rehabilitation and so they did not always have an accurate understanding of the ongoing the implications of their injury. Achieving work appeared to be facilitated where the perceived and actual RTW capacity matched; this was influenced by good goal setting and good relationships with ACC and vocational providers. Conversely, this appeared more difficult where there was a mismatch. If a mismatch occurred, having a flexible employer/workplace or an easily modifiable job, especially if aspects of the job could be done from home, appeared beneficial. When injured participants benchmarked their speed and hours of RTW against other injured earthquake survivors in a positive way this could assist the RTW process. However, benchmarking seemed negative and appeared to slow RTW if the injured participants used this information to manipulate outcomes and justify their own RTW decisions.

In summary, injured participants who were able to modify their job and still maintain job satisfaction, who felt safe within their work environment, felt they had control over the RTW process and the hours they worked, and were meeting their goals, appeared to have better RTW experiences. In some cases, the planned RTW did not match the reality, and changes had to be made to the RTW process. This meant that the injured participant returned temporarily to planning and preparing for work.

8.5.3 Maintaining work
The final stage of RTW was maintaining work. During this final stage the participants achieved a level of work they could maintain, as assessed through their work capability. They appeared to evaluate the sustainability of their work balanced against other aspects of their life. In this study only the less seriously injured participants had achieved full time RTW by the second interview, three years after the injury. None of
the seriously injured participants were working at their ACC predicted capacity. Table 8.4 shows the influences on *maintaining work*. The recovery process in *rebuilding normality* and the influence of the *earthquake experience* appeared less relevant in this stage of RTW. Ongoing empathy from colleagues seemed to be the only influence from the *earthquake experience* that impacted on maintaining work. The categories *negotiating RTW*, and *operating within the system* were mutually important and featured prominently in *maintaining work*. The balance between life priorities and work were vital. To maintain work it appeared important that the injured participants’ RTW hours matched the predicted work capacity as assessed by ACC.

Where there was a mismatch in expectations between the actual and predicted work capacity, the injured participants, either had to return to the planning stage and explore different types of work, or return to *achieving work*, and further adapt their existing work situation so they could maintain their predicated work capacity. In this stage the injured participants, again, seemed to benchmark against others to justify or contest proposed increases in work hours/conditions. If maintaining employment at work capacity was difficult, injured participants with visible injuries appeared in a better position to justify a need for part-time hours. Some injured participants appeared to want to work part-time to achieve a work life balance with their disability; again, a visible injury made it easier to validate their need to work part-time. The experience of the earthquake appeared to have the least influence on *maintaining work*. The less seriously injured, who did not have a visual impairment, appeared to have more difficulty maintaining work because their injury issues were often hidden and their workplaces were less empathetic. These participants often felt they had more difficulty getting workplace accommodations and felt their accommodations were scrutinised by their co-workers. In addition, the less injured participants also appeared to have difficulty talking about their experiences of the earthquake with people they perceived were more seriously injured in the earthquake and felt overlooked or forgotten by colleagues and family over time. Similarly, seriously injured participants with invisible side effects of the injury that were not disclosed felt they received less empathy from colleagues.
### Table 8.4 The barriers and facilitators of maintaining work

<table>
<thead>
<tr>
<th>Category</th>
<th>Maintaining work</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barrier</strong></td>
<td><strong>Influence</strong></td>
</tr>
<tr>
<td>Rebuilding normality (Section 7.1)</td>
<td>No longer justified – not achievable</td>
</tr>
<tr>
<td></td>
<td>Re-evaluate work situation</td>
</tr>
<tr>
<td></td>
<td>Low job satisfaction</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Negotiating the RTW journey (Section 7.2)</td>
<td>Feel unable to meet life goals and work to capacity, or prioritised other activates over work and no longer want to work to capacity</td>
</tr>
<tr>
<td></td>
<td>High/unrealistic expectations of colleagues or negative or unhelpful attitudes</td>
</tr>
<tr>
<td></td>
<td>Caring role in family. Demanding or high needs of family</td>
</tr>
<tr>
<td>Operating within the system (Section 7.3)</td>
<td>Not reaching ACC assessed capacity for work level and do not want to change jobs</td>
</tr>
<tr>
<td></td>
<td>Separate goals and different expectations. No acknowledgement and help with non ACC goals</td>
</tr>
<tr>
<td>The earthquake experience (Section 7.4)</td>
<td>Little understanding from colleagues, empathy short lived or non-existent</td>
</tr>
</tbody>
</table>

In summary, by the time the injured participants reached the final stage of RTW the influences from *the earthquake experience* and *rebuilding normality* were less important. However, only the less seriously injured participants had achieved this stage of RTW three years after the earthquake.
8.6 Considering findings in relation to the International Classification of Functioning and Disability framework

Overall, the greatest impacts on RTW after the Christchurch earthquake appeared to be environmental factors. Within the ICF framework, the environment has a broad application which includes the natural environment (e.g. earthquake damage to the area), but also encompasses support and relationships (e.g. support from employer), attitudes (e.g. attitudes of health professionals and colleagues), and services, systems and policies (e.g. ACC legislation) (World Health Organisation, 2001). Although everyone’s experience was unique, the earthquake created a collective experience for everyone in Christchurch; so the injured participants did not experience their injury in isolation. The RTW environment was altered physically, financially or geographically for all the injured survivors and their co-workers, family and friends. Many of the injured participants returned to a relocated workplace, which was a new environment for their colleagues as well. As a consequence, workplace accommodations, adaptations and changes for the injured earthquake survivor did not disrupt longstanding systems or situations; rather, they were incorporated into new situations as they arose.

The health and insurance systems, policies and legislation impacted directly on RTW. They affected the provision of rehabilitation services required before the individual could consider RTW, as well as the specific RTW services. The system determined the trajectory of the RTW journey through established process and pathways, which left little opportunity for the injured survivors to pursue innovative RTW opportunities. The alignment of the stakeholders’ (ACC, vocational and the injured participants) goals and expectations appeared variable, but this was difficult to measure because each RTW stakeholder had a different perception of success. Attitudes of the RTW stakeholders, other professionals and the wider society impacted RTW on many levels, including the individual goals and expectations of work. Empathetic employers and co-workers were an early positive influence on RTW and appeared to increase the flexibility of the RTW process. The support of the injured individuals at the workplace seemed paramount in the RTW experience; with the workplaces most affected displaying the most empathy. Although the strength of the workplace empathy appeared to decrease over time, the
participants with physical validation of their injury tended to receive empathy from the workplace for the longest time.

Personal factors also appeared important in RTW. These influenced the injured participants’ reasons to work, how they coped and dealt with the earthquake experiences, and the negotiation style they used on the RTW journey. Their personal life priorities impacted on how they balanced work with other aspects of their life. The injured participant’s pre-injury work role appeared important in re-establishing self and reconciling the past and present identity as part of *rebuilding normality*. Work also appeared a pivotal part of determining identity and was used as a building block to rebuilding a normal life. The emotional response to the earthquake experience seemed to have a marked influence on RTW. The direct effect was immediate with the injured survivors’ sense of disaster and their need to feel safe when faced with continuing aftershocks. The psychological impact of the earthquake continued long after the initial injury and remained an invisible impairment for many of the injured participants.

Activity and participation impacts on RTW were shown through the participants’ roles within the family, their interpersonal relationships and the integration of other participation activities with RTW. Participation goals away from work also appeared difficult to re-establish, due to the environmental issues associated with the earthquakes, such as social clubs and church buildings being damaged or relocated, as well as a lack of transport and difficulty accessing the temporary buildings they located to. The injured participants appeared to prioritise work in their efforts to rebuild normality but often used the same skills and processes they developed during RTW to then re-establish other participation goals.

Body structures and functions – frequently a key focus for rehabilitation services (Kirchberger, Sinnott, Charlifue, et al., 2010) – were described as having the least impact on RTW. Their impact was greatest immediately after the injury and dominated the early phases of recovery. Participants appeared to need to be close to reaching their predicted physical recovery before they commenced RTW. Any residual impairment was accommodated through environmental modifications to the workplace or modification of work roles. These modifications appeared accepted more when the impairments were visible or the injured participants disclosed them. As the ongoing
emotional impact of the earthquake was often invisible it was easily overlooked by others, but had a large impact on RTW for the injured participants.

This chapter has presented the RTW theory for the injured participants of the Christchurch earthquake, demonstrating both the complexity and the unique influences on RTW after an earthquake injury. Although the greatest impacts on RTW appeared to be environmental factors, the interaction of the four categories of RTW changed throughout the RTW journey across the different stages of RTW. The next chapter will relate the model to the existing RTW literature.
9 Discussion

9.1 Summary of the research

The main objective of this study was to explore the issues influencing RTW of people injured in the Christchurch earthquake and how these findings could contribute towards the development of a theory. Chapters 6, 7 and 8 presented the findings and the substantive theory linking the four categories. This chapter discusses that theory within the context of the relevant literature, reflects on the strengths and weaknesses of the research and makes recommendations for research, policies and practice. For ease of reading where I am exploring the PhD findings in relation to other research, I will refer to ‘the PhD study’

The first aim of this thesis was to understand the levels of participation and QoL outcomes in individuals with earthquake-related injuries. The results from the systematic review (Section 4.3) highlighted the limited knowledge of participation outcomes for injured earthquake survivors, as well as identifying methodological problems in many of the studies published. RTW was the most frequent participation measure investigated and results showed low RTW rates of injured earthquake survivors in developing countries (15.4%, to 51%) (Hu et al., 2012; Roy et al., 2005). The literature contributed little understanding about why or how RTW was different for the injured earthquake survivors, compared with other trauma survivors, with none of the papers in the review focusing solely on RTW. The review indicated that QoL outcomes of injured earthquake survivors were low, and may be lower than those of non-injured earthquake survivors.

RTW after an earthquake injury in a developed country like NZ generates different issues compared to a developing country. NZ has a good health service and all medical, rehabilitation and ongoing care costs are covered by a national accident insurance scheme, meaning an established RTW process for people with injuries is already in place. In addition, weekly earnings compensation is provided for individuals employed at the time of their injury. This is in stark contrast to injured earthquake survivors in the developing world, who face a bleak prospect with little or no rehabilitation services, limited ongoing financial support and no vocational assistance or legislation to promote RTW after injury (World Health Organisation, 2011). These differences, the lack of
literature from developed countries and the limited RTW information in the systematic review prevented the inclusion of this information into the model of RTW after earthquake injury.

The second aim of the thesis was to produce a grounded theory to identify and describe the influences on RTW over time for people injured as a result of the February 22nd earthquake in Christchurch. I constructed a substantive theory that contributed new knowledge in this area, identifying unique influences on RTW after earthquake injury. There were five key findings which will be addressed:

1. The theory described the changes over time in the RTW process as injured participants addressed three separate stages of RTW with specific barriers and facilitators at each stage: (1) planning and preparing work; (2) achieving work; and (3) maintaining work.

2. The theory explained, first, how RTW in NZ was defined by the ACC system, which had an established RTW process that did not appreciably change after the Christchurch earthquake, although there were some differences that arose as a consequence of the earthquake. However, the expectations of the injured participants appeared greater after the earthquake, because of their experience of the earthquake, the national interest as discussed through the media and the outpouring of sympathy/concern. This created incongruous RTW goals and expectations between the injured participants and ACC processes.

3. The theory indicated that work was an integral part of the goal of recovery after earthquake injury and acted as a building block between recovery and getting on with a normal life. The changed environment of the earthquake appeared to make work more important than other participation goals as it emerged as one aspect of their lives the injured participants were able to control. Emotional recovery from the earthquake was a unique and additional aspect of recovery, and was dependent on their earthquake experiences rather than injury severity.

4. The changes to the environment as a result of the earthquake appeared to contribute the biggest changes to RTW and seemed to influence all stages of recovery and the RTW process.
5. Empathy from the shared experience of the earthquake seemed integral to creating an environment of increased flexibility in the workplace. The influence of the employer and co-workers was a key influence in the RTW experience and was dependent on the degree of shared experience at the workplace. Visible physical injuries were a validation of disability while invisible or undisclosed side effects were more likely to be overlooked or underestimated.

These five key findings are discussed further in the following sections in relation to key areas of relevant practice, policy or research.

### 9.2 Implications for the return to work process

The contextual framework from this study identified that RTW after an earthquake injury is multifactorial and involves multiple stakeholders, this is supported by other authors (Young, Wasiak, et al., 2005). It shows RTW after an earthquake injury is a dynamic process which progresses through three stages: (1) *planning and preparing work*; (2) *achieving work*; and (3) *maintaining work*. These findings indicate RTW after an earthquake injury follows a similar process to that shown after traumatic injury (Chan & Man, 2005; Chapin & Kewman, 2001).

Other authors also proposed a multi-stage progression of RTW. Young, Roessler, et al., (2005) conceptualised four stages of RTW: “off work,” “work re-entry,” “retention,” and “advancement.” The first three stages of their conceptualisation progress in a similar manner to those identified in this PhD study. Young, Roessler, et al., (2005) describe an additional RTW stage, advancement, where the worker seeks advancement through promotions or higher-level job tasks and responsibilities. This stage was not identified in the PhD research (although one participant did achieve a promotion during the duration of the interviews). This finding may be specific to the earthquake injury situation, but it is more likely because the current research did not continue for long enough to cover advancement, so the seriously injured participants were still acquiring and evaluating work and had yet to move onto the later stages of the process. This may indicate that issues of advancement were not discussed with the injured participants during their initial RTW, but perhaps, as Young, Roessler, et al., (2005) proposed, advancement should be considered a phase of successful return to work and something people returning to work after injury should be prepared for. However, work
advancement may be more appropriate to address once full time work or work capacity is achieved.

Another possibility for the lack of advancement in the PhD study is the predominance of older, injured participants in the present sample, so work progression was not as prominent as many of the participants had already achieved a high status within their employment. However, Chapin and Kewman (2001) similarly determined four sequential stages in a grounded theory study of RTW in SCI: job consideration/exploration, job seeking/offer return to work, job maintenance/advancement and the perceived advantages of working. Their framework specifically described job seeking, which was not identified in the PhD study, perhaps because all the injured participants were returning to their pre-injury work, so job seeking was less relevant for them. Similar to the PhD study, Chapin and Kewman (2001) also combined job maintenance and advancement in their third stage of RTW. Unlike the injured participants in the PhD study, who determined reasons to work before planning to RTW, Chapin and Kewman (2001) identified their final category as the perceived advantages of working. Chapin and Kewman (2001) theorised four moderating variables influenced these processes: physical impairment, activities/skills, the environment and psychological variables. The latter was sub-divided into optimism, self-esteem, achievement, orientation and role models. Supporting the results of the PhD study, Chapin and Kewman (2001) identified that environmental and psychological factors had the greatest effect on employment.

Young, Roessler, et al., (2005) proposed a goal focus to progression through the stages of RTW. However, such an approach was not apparent in the research presented in this thesis. Rather, progression was based on work capacity, as determined by ACC, rather than a shared or client-centred goal. Other studies supported the finding that different stakeholders or health professionals hold different perceptions of client-centeredness (Gachoud, Albert, Kuper, Stroud, & Reeves, 2012; Hammel, 2013; Leplege et al., 2007) and how to implement it (Mudge, Stretton, & Kayes, 2014). Accordingly, there may be ideological as well as organisational barriers limiting client centred care within an insurance-based RTW system. That is not to imply that insurance companies do not try to provide a client-centred service but, rather, their ideological definitions and applications may not fit an earthquake or other disaster situation.
Another difficulty with a goal focused RTW is establishing a shared goal. Although on the surface the stakeholders in this study were all focused on RTW, each of them had different definitions of success with little evidence of a unified goal. This has been shown elsewhere (Leyshon & Shaw, 2012; Young, Wasiak, et al. 2005). In this study, the injured survivors used work as a step towards a larger goal to rebuild normality, but ACC professionals saw RTW as the main goal, and appeared more interested in the achievement of predetermined hours and matching actual RTW with the predetermined work capacity. The vocational providers seemed to sit in the middle with the intent of achieving client-orientated RTW goals within the contractual time frame determined by ACC. These differing perspectives further confounded the problems around goal setting for RTW in NZ, reducing the possibility of setting goals which held shared meaning that all parties had an investment in. More importantly, this reduced the possibility of agreeing on a goal which would drive the rehabilitation process and ensure the appropriate supports/resources were put in place. A different structure to goal setting should be considered. An emphasis should be placed on facilitating knowledge transfer across the key stakeholder groups to acknowledge and integrate the different perspectives while working collectively to achieve RTW outcomes that fulfil the expectations of all groups.

Injured participants in this study felt that the RTW process should be, but was not always client-centred, due to the limitations in the structure and processes of the insurance system, which focuses on what insurance companies can provide, rather than what the client wants. To change to a client-centred focus, the organisation could specifically include consideration of clients’ goals in assessments. Some of the clients’ goals would then require funding outside of the insurance system (for example, additional equipment and services). There are many issues inherent in providing such a service, and the differing expectations of insurer and the injured clients would need to be clearly defined, with better communication than is evident with the present system.

In NZ, because the ACC system is founded on legislation, it is not always easily amenable to changes to keep up with current rehabilitation practices. As such, it inevitably reflects historical RTW discourses relevant to when the legislation was implemented or amended, rather than current RTW discourses for serious injuries. In addition, ACC is unable to react or adapt quickly to individual or, even extreme circumstances as witnessed in the Christchurch earthquake. With these limitations is
unlikely that ACC could provide a truly client-centred practice for RTW, which could limit the application of a goal based RTW taxonomy in NZ. Despite this, the legislation is not entirely rigid. Some flexibility is possible in the system within the ‘actors’ interpretation of the legislation. Further, ACC itself is examining how it might be more ‘person-centred’ while, at the same time, be a fiscally sound organisation. (Accident Compensation Corporation, 2014). Given levy payers resource the ACC system, the pace of change in approach is likely indicative of what matters most to those levy payers.

The data indicated a quite nuanced tension between the insurer and the injured participants over the purpose of RTW intervention. The injured survivors appeared to perceive ACC as trying to get them off the scheme and back to RTW as early as possible regardless of how that ‘fitted’ them. However, the ACC policy of early RTW is evidence based with the literature supporting early (as long as it is timely) RTW as important for people’s future as it provides health and QoL benefits (Waddell et al., 2008). The real issues here may be how insurance companies and other organisations do or do not work together towards the RTW goal with their injured clients.

From the PhD study, it had been shown that the severity of the injury impacted on the participant’s expectations of RTW. Those with serious injuries appeared less confident about returning to work, although they initially expected to RTW full time, many of them changed their opinion and felt part-time work was a more realistic expectation. Conversely, those with less serious injuries were more confident about RTW and had all returned to work full time. These two injury groups were eligible to different entitlements from ACC. As they followed different rehabilitation pathways, the expectations and experience of goal setting for the people in the two different injury groups may have been influenced by their rehabilitation experiences. It is mooted that rehabilitation facilities may neglect participants’ goals at the expense of goals that are more achievable within the hospital setting, such as physical goals (Levack, Dean, Siegert, & McPherson, 2011). This may predispose the seriously injured participants, who had long periods of rehabilitation, to place increased importance on their physical recovery rather than RTW. Vocational intervention started early after injury may capitalise on the early positive RTW thoughts and goals identified by the injured earthquake survivors and maintain continuity of goals from rehabilitation to RTW. To some extent, this continuity was evident within the participants with SCI, who received
early vocational intervention. This was not evident with other serious injuries, such as amputees, who started vocation intervention once they were discharged from the hospital.

The framework from this research identified barriers and facilitators specific to each stage of RTW. A number of these are specific to the earthquake environment, but they also included other influences that are likely to apply to the wider trauma population. These will be discussed more fully in the following sections.

9.3 The implications of recovery and work

From this current PhD study, work was identified as an important component of the earthquake survivors’ goal to rebuild normality. Work also formed an integral part of the recovery process. The importance of work in restoring normality is evident in other injury groups, such as acquired brain injury (Johansson & Tham, 2006), and work has been linked to a sense of normality for people living with cancer, trauma, HIV/AIDS, musculoskeletal disorders and SCI (Saunders & Nedelec, 2014). Other studies have found that work can be normalising by providing routine, restabilising identity, or as a distraction from illness or treatments (Kennedy, Haslam, Munir, & Pryce, 2007). In the PhD study the injured participants identified additional reasons for pursuing RTW; including financial and social reasons. These influenced the importance injured participants placed on work and whether they prioritised rehabilitation or work as they balanced the two activities.

The injured participants pursued other activities to help them rebuild their sense of normality, such as sport, leisure activities and involvement with social groups, including churches and craft groups, but these activities were also disrupted because of the earthquake. For the majority of the injured participants the RTW process facilitated rebuilding normality in other aspects of their life that aided their overall recovery. O'Grady Boyce and Fleming-Castaldy (2012) reported similar findings in their study of women with SCI where sport assisted in regaining a sense of community and enabled the women to connect with their family and re-establish a positive self-identity. This arguably reflected a situation where the injured participants initiated self-directed rehabilitation pursuing other interests, rather than simply following the rehabilitation thrust of organised services. The injured participants felt they had more control over re-
establishing work compared to other occupations/interests. In addition, there was
government help, public assistance and ACC support for RTW.

In the PhD study, work linked the physical and emotional recovery of an individual
with the final stage of recovery – *getting on with life*. Wright and Kirby (1999)
conceptualised a similar process of adjustment for people with renal failure. Like the
injured participants in the PhD study, the participants with renal failure adjusted to their
illness through a process of realising their limitations and getting back to normal life,
before finally accommodating their life to illness and treatments. Like the earthquake
survivors, Wright and Kirby’s participants with chronic illness also identified an initial
physical focus to adapting to their illness where they needed to see health gains before
they could focus on participation goals. They then restored valued roles, which
included work, before they could adapt their lives. In a similar presentation to the
earthquake survivors, *getting on with life* was the final stage of recovery. Wright and
Kirby (1999) found acceptance of illness was only possible once the person
acknowledged the permanence of their condition and integrated the illness into their
identity; described in this PhD study as physical and emotional recovery. Work has also
been linked to increased adjustment after injury (Krause, J.S., 1992) and to improved
QoL (DeVivo & Richards, 1992; Krause, J.S., 1992, 1996; Siosteen, Lundqvist,
Bloomstrand, Sullivan, & Sullivan, 1990; Yasuda et al., 2002).

Although planning a RTW started for many of the injured participants during
rehabilitation, a level of functional recovery that fitted the type of employment was
required before they actually achieved work, indicating the process of recovery
impacted on RTW. All injured participants followed the same steps of recovery
irrespective of injury, with only the speed of progression differing. Those with less
severe injuries generally progressed faster through the physical recovery, which may be
why the trauma literature shows individuals with less serious injuries RTW earlier
(Clay, et al., 2012; Fort et al., 2011; Krause, J.S., Terza, & Dismuke, 2010; Tøien,
Skogstad, et al., 2011; Yasuda et al., 2002). The results of the PhD study indicate it is
likely that RTW research measured at a single point (before two-years post injury) will
show lower RTW for people with severe injuries, especially neurological injuries. This
may underestimate the true RTW rates for people with severe injuries as they may just
take longer to RTW.
The PhD study showed injured participants faced a dual emotional recovery from both the effects of their injury and the earthquake experience. The emotional effect from the earthquake was substantial, with participants experiencing sleep disruption, avoidance of the city centre and anxiety; however, given the knowledge that women with higher exposure to the disaster are more at risk of PTSD, this was not an unexpected result (Başoğlu et al., 2004; Başoğlu et al., 2002; Chen, T.W. et al., 2011; Kuo et al., 2007; Lai et al., 2004). Interestingly, the earthquake emotional recovery appeared linked to the earthquake experience, such as being trapped, experiencing the death of a colleague, and having a memory of the event rather than the severity of the injury sustained. However, the severity of the injury appeared to influence the speed of progression to emotional recovery from the earthquake and the time spent focused on it. Consequently, as the less seriously injured participants achieved RTW faster, some of them were noticeably experiencing emotional distress during this period.

PTSD has also been shown to delay RTW following other disasters. After the 9/11 terrorist attack in the United States, one rehabilitation programme found only 262 of the 3,567 participants (13.6%) returned to the workforce during the first year of the programme (Precin, 2011). The majority of the participants were uninjured, although the study did not specify how many of these were female. In the PhD study, 80% of the earthquake injured participants who had been employed at the time of injury had returned to work by two years after the earthquake. A study of survivors of both natural and man-made disasters showed a 95% RTW rate at three years, although work outputs or quality of work were not considered (Rasco & North, 2010). These participants were 59% female and all described themselves as not disabled at follow up. The injured participants in the PhD study, therefore, had a similar RTW as those in Rasco and North’s (2010) study, but much better than the participants in the 9/11 programme, which may be because of the differences in the cause of the trauma.

For the injured participants, RTW was a sequence of balancing acts as they weighed this up or balanced work with their rehabilitation and then other life priorities. People who returned to work for status and job satisfaction were more likely to prioritise work higher than someone whose reason to work was to “fill time.” The balancing of decisions around RTW was also shown in a grounded theory study looking at RTW decisions in individuals with SCI in NZ. Fadyl and McPherson (2010) found regaining normality was important to their participants, who weighed up the positive and negative
implications of work to determine whether it provided enough benefit to be worth pursuing.

Initially, physical rehabilitation replaced work as a full time occupation while the injured participants were in hospital; and some of the participants continued this focus after discharge. This has been described as “illness work” by Parsons, Eakin, Bell, Franche, and Davis (2008) in people who RTW after a diagnosis of bone cancer. In the PhD study a person’s rehabilitation demands were balanced with RTW. Although many of the injured participations reported receiving predicted time frames of recovery from medical professionals, there appeared to be a disconnect between what the injured participants reported they were told about recovery and what they understood recovery to mean. Consequently, the participants seemed to have unrealistic expectations of the level of recovery they would achieve at the end of the predicted time frame - the participants’ expectations often exceeded their actual recovery. This indicated that ‘how’ information on recovery expectations is presented to individuals is important. Many of the participants in this study delayed RTW in order to reach a level of physical recovery, which was not always achievable. In addition, the personal opinions of the health professionals influenced how the injured participants perceived RTW. Unfortunately, it appeared the RTW process was not considered to be ‘rehabilitation’. However, there is a case to be made for ‘work as rehabilitation’ in some contexts. The evidence indicates that work can be good therapy if managed well (Waddell & Burton, 2006) so there should not be an expectation that patients/clients/injured individuals wait to complete rehabilitation before work becomes a reality. This concept could be explored further in future RTW studies.

The speed of RTW seemed to be enhanced when there was flexibility of the employer to allow rehabilitation to occur alongside RTW, or when there were opportunities for rehabilitation programmes to take place outside normal working hours. More emphasis could be placed on the context of rehabilitation and facilitating the best option for the injured person, whether that is actually in a gym or within the workplace, if that could be a suitable setting, with exercise programmes and activities incorporated into the working day.

In this PhD study multiple elements seemed to be considered in the balancing act at different stages of the RTW process. These elements included family responsibilities,
the benefits and reasons to work, financial responsibilities and rehabilitation needs. The importance the participants placed on these elements changed over time as they increased their work hours and ascertained if their planned work expectations were realistic. Once work was established, participants balanced the demands of this with their new life priorities, indicating goals outside RTW, such as social activities, may be more important; this is supported by the findings of Levack, McPherson, and McNaughton (2004). Similarly, other studies have indicated people balance their lives by engaging in personally meaningful activities and participation (Håkansson, Dahlin-Ivanoff, & Sonn, 2006; Holmgren & Ivanoff, 2003).

In the PhD study, the injured participants described major disruption to their social support and their environment as a consequence of the earthquake, which seemed to contrast with the typical trauma situation where the person returns to an unaffected environment. In another NZ-based study, Hay-Smith and co-authors found work was perceived by their participants as the final piece of the puzzle, a sign of returning to ‘normal’ life after SCI (Hay-Smith et al., 2013). The other pieces of the puzzle consisted of the person, their social support and the environment. Similarly, the injured participants in the PhD study considered RTW paramount to achieve a normal life but, in contrast to the findings of Hay-Smith et al. (2013), the injured earthquake participants prioritised work above other activities. One reason this may be different in this earthquake injured group is that their social supports and environment were disrupted and modifying this was beyond their control. Therefore, work became the factor most amenable to change giving them some control over RTW. So work increased in importance and became an early consideration for the injured participants, rather than the final piece of the puzzle.

Immediately post injury, the injured participants still identified with their previous roles and status in society, being labelled disabled appeared to have negative connotations. This socially and culturally constructed label is known to be stigmatising (Bryson-Campbell, Shaw, O’Brien, Holmes, & Magalhaes, 2013; Nochi, 1998; Price, Stephenson, Krantz, & Ward, 2011) and the injured participants were unwilling to accept such a label in the early stages of recovery. In particular, the wheelchair users actively resisted the disability label and RTW was perceived as a way to return to a more normal status (as discussed in Section 7.1.2). Work became one sphere of their life, or a place where the participants felt they could lose the disability label. This has
been identified as occurring in women living with fibromyalgia syndrome (Crooks, Chouinard, & Wilton, 2008) and in people with mental health disorders (Dunn, E.C., Wewiorski, & Rodgers, 2008). These findings suggested that reconstructing identity outside or without employment is more difficult, and that returning to pre-injury work may speed up or simplify this process. Work became a link to the past for the injured participants and their work identity was perceived as a key component of who they used to be, a strategy also noted by Magnus (2001) as a way to maintain identity and a sense of self.

The importance of work identified in the PhD study is supported in other studies. Work can be a defining characteristic of a person (Oppermann, 2004), important for social status and role, and a core aspect of identity (Waddell & Burton, 2006). Reed, K., Hocking, and Smythe (2010) described the sense of self as connected to ‘doing’. In the PhD study ‘doing’ work heightened the sense of self and created a link to the injured participants’ past identity. Regaining a sense of self was identified as big part of emotional recovery from the injury in this study.

The sense of self has also been recognised in other illnesses; Bury (1982) described identity loss in chronic illness as a biological disruption, while Charmaz (1983) coined the term ‘loss of self’. After traumatic injury Morse and O’Brien (1995) described the process of preserving self, which starts at the point of injury and progresses through rehabilitation to becoming a disabled person. This description was useful in understanding the transition of self, but appeared to simplify the transition between discharge and becoming a disabled person, which Morse and O’Brien described as the final phase where the old and new realities merge. This merging of the old and new realities was much slower in the injured participants in the PhD study and happened over a prolonged period in the years after discharge from the hospital.

Yoshida (1993) theorised that the process of reconstructing self and identity was less linear than Morse and O’Brien (1995) suggested, instead likening it to a pendulum swinging back between the disabled self and their former self. Papadimitriou and Stone (2011) progressed this theory by adding a temporal dimension, proposing individuals attempted to reconcile their present selves with a disconnected past and struggle to inform their future. Papadimitriou and Stone (2011) suggested helping people draw upon experiences from their past to assist their present, consistent with the participants
in the PhD study who drew on their perception of their past employment identity to reconcile themselves to their present situation in an attempt to return to normality. Galvin (2005, p. 409) suggested the disability identity was derived from internal as well as societal influences, proposing people who continue to feel marginalised remain trapped in their own individualistic view of disability because they tried, “To obtain the normative goals which are inherent to rehabilitation.” It may be that rehabilitation perpetuates the goal of normality and rehabilitation professionals may inadvertently perpetuate a hope of a recovery to what the person had before, rather than to a full recovery within the limitations of the injury. Providing time frames for recovery may keep the injured person focused on physical recovery at the expense of other areas such as emotional recovery or RTW.

In addition to their self-image, many of the female participants, particularly the wheelchair users, were concerned about their injured body image. This impacted on RTW as they questioned how they would be perceived now they were reliant on a wheelchair for mobility. Close links have been shown in other studies between body image and self-image (Bengum, 1992; Noonan et al., 2004). Krause, J.S., Terza, Saunders, et al., (2010) found no gender differences in RTW in their study of people with SCI, but did show women were significantly less likely to return to full time employment. This may reflect the additional time spent by women on other work roles that were not remunerated. Recognised gender differences between males and females exist in rehabilitation and RTW (Cote & Coutu, 2010), and it is acknowledged that men have their own gender-specific issues after injury that may actually pressure them to RTW (Burns, S.M., Hough, Boyd, & Hill, 2010).

The majority of the participants in the PhD study were women; some researchers would consider this created a dual oppression, the disadvantages of being women and disabled (Bengum, 1992). Gender may influence other people’s perception of disability, with women perceived as needier and as less capable than men in the face of the same disability. In SCI, for example, the greater physicality of men makes them more proficient at wheelchair skills and, typically, more able to achieve independence in physical tasks such as transfers. These perceptions may also be transferred to the workplace. The women in the PhD study, especially the married women, had expectations they would resume gender or family specific roles, and the additional pressure to match these expectations made RTW more difficult to achieve. This was
also found in other studies where Magnus (2001) concluded that a women’s identity as a mother and their role as a parent was an important influence in decision making. Similarly, Lederer, Rivard, and Mechakra-Tahiri (2012) postulated that care for dependents was considered paramount and delayed RTW in a group of adults with work-related musculoskeletal disorders on long term disability.

This study concentrated on RTW outcomes, but the role other activities played in the identity and normalisation for people with disabilities must also be acknowledged, especially gender assigned roles which were not remunerated and, therefore, not supported in the same way by insurance companies.

9.4 Implications of the environmental factors

Environmental factors had the greatest impact on RTW for the injured participants. Although the services, systems and policies that played a role in RTW were similar to those in other trauma situations, the physical work environment and infrastructure influences that specifically resulted from the earthquake were not. Both the home and work environments of the injured participants were affected by the earthquake. Disruption to transport infrastructure made transportation an important consideration in planning RTW. Environmental issues have been identified to influence RTW in a non-earthquake situation (Chapin & Kewman, 2001; Conroy & McKenna, 1999; Lidal et al., 2007). Whiteneck et al. (2004) reported the top five environmental barriers for people with SCI were the natural environment, transportation, help in the home, availability of health care and government policy. The availability of suitable jobs was also important (Noreau et al., 1999) as many workplaces relocated or closed as a result of the earthquake (Stevenson, J. R. et al., 2011). This demonstrated the extensive impact the environment had on the RTW of the injured participants.

While workplace assessment are common in the RTW process, health professionals need to ensure they account fully for the variety of environmental issues, such as workplace relocation and transportation, as well as mobility limitations due to the injuries sustained, which affected the injured participants RTW. The insurance systems’ policies appear to be written to suit clients with passive negotiating styles who adhere well to the system, with less flexibility for people with active negotiation styles who have different expectations of the system. MacEachen, Kosny, Ferrier, and Chambers (2010) identified issues accommodating disabilities in workplaces where poor
communication between providers and deficient administrative management hindered RTW. They also found the workers’ compensation system was set up to suit a specific group of clients who were literate, intelligent workers, with good communication skills from harmonious workplaces. People who did not fit these criteria did not manage as well.

The earthquake disrupted the existing social supports of the injured participants and new support networks, such as the peer support from other injured supporters, became important. Support is defined as an environmental factor in the ICF (World Health Organisation, 2001) and can be considered as emotional, practical, or informational. Similar to the findings in this study, support has been shown to motivate women with SCI to return to occupations (Isaksson, Lexell, & Skär, 2007) and were specifically identified to facilitate RTW in disabled women (Noonan et al., 2004). This PhD study endorsed the call from other researchers, such as MacKenzie et al. (1987), for early inclusion of social networks in RTW planning and highlighted the importance of support from co-workers and employers. The impact of the earthquake appeared to make a positive difference to the support offered by the workplace.

9.5 The influence of empathy and employers

The PhD study demonstrated that a unique influence of RTW in a post-earthquake environment was the shared experience of the earthquake with co-workers and the employer. This created empathy and offered greater flexibility in RTW options. In the PhD study employers demonstrated this by offering options for injured employees to work from home and creating flexibility in the hours and days of RTW. Other studies have found the amenability of the employer and co-workers is determined by multiple influences (Dunstan & MacEachen, 2014). These influences are likely to differ between different countries because of legislative requirements and compensation, or insurance systems and processes.

Employers may be an underutilised resource in the RTW process. In the PhD study all the injured participants who resumed employment returned to their previous employer. RTW with an existing employer has been shown to be quicker (Chan & Man, 2005; Krause, J.S., Terza, Saunders, et al., 2010b; Ramakrishnan et al., 2011) and, in this study, increased empathy from the employer facilitated better accommodation in the workplace, creating a flexible environment for faster RTW. These findings were similar
to previous studies where goodwill in the workplace was shown to be important in achieving RTW (Dunstan & MacEachen, 2013; MacEachen et al., 2006).

The PhD study also found the accommodations in the workplace influenced RTW after the earthquake. Accommodation has also been shown by other authors to influence RTW (Tjulin, MacEachen, Edvardsson Stiwne, & Ekberg, 2011; Tjulin, MacEachen, & Ekberg, 2010), and accommodation appears to be important for creating a positive experience of RTW, and for the sustainability of work. Accommodations were more likely for injured employees who could validate their injury; for example, if it was very visible. This result was supported by Dunstan and MacEachen (2014), who created a theoretical framework of the role of co-workers in RTW, based on the model suggested by Colella (2001). Dunstan and MacEachen (2014) postulated that co-workers’ responses to the injured person are determined by their perception of the fairness of the decision and outcome of accommodations made for the injured employee. This decision is based on the individual characteristics of the injured person and, importantly, in the context of this research, the type and cause of injury, the workplace characteristics and the responses of the employee. In most cases the earthquake appeared to have positively influenced the balance of these judgements in highly impacted workplaces. Results from the PhD study indicated the closer to the earthquake experience the employee and co-worker were, the more empathetic their response to the injured participants returning to work.

The earthquake survivors also evoked feelings of empathy from the New Zealand public. The earthquake, and therefore the earthquake, survivors received noticeable media attention which provided them with a platform to engage with the general public and gain more political influence than other injured people who were injured due to other causes such as MVA may not have access to. McKie and Richardson (2003) describe ‘the rule of rescue’, where people are more likely to rescue identifiable individuals from avoidable death over an anonymous group, even if rescue of the anonymous group may produce more cost efficient outcomes. In this situation, it may be that through the media focus, the earthquake survivors become an identifiable group, which the public felt a desire to ‘rescue’. The compassion and sympathy for the circumstance/situation facing the injured earthquake survivors created a sense of moral obligation in the general public. This may have perpetuated a sense of entitlement, where the earthquake survivors felt they deserved special treatment and extra allocation.
of resources. Some earthquake survivors capitalised on this media driven attention to ensure they in an attempt to obtain received the entitlements they thought they deserved.

Another important factor considered when evaluating the fairness of accommodations for an injured employee/co-worker appeared to be the understanding of their injury. The injured participants in the PhD study identified injury disclosure as similar to an iceberg. In this analogy, only visible impacts of the disability can be seen and many of the implications of living with a disability were hidden below the surface. As mentioned earlier, the PhD research indicated the validation of disability for people with obvious physical signs of injury or disability, and was also identified by Ville, Ravaud, Diard, and Paicheler (1994), while non-visible disabilities or side effects appeared above the surface only if they were disclosed by the person with the injury. In many cases individuals were unwilling to disclose the full impact of their disability to their employer/co-workers because they feared being identified as disabled. However, this appeared to be a double edged sword when, as a result of the hidden disability, injured participants were perceived by their co-workers to be recovered or normal or better functioning than they actually were. Consequently, injured participants could be considered to be receiving undeserved entitlements, as without physical evidence their claims appeared to lack validity, influencing the ‘buy in’ from the co-worker (Colella, 2001; Stergiou-Kita, Mansfield, & Colantonio, 2014). In addition, a lack of knowledge about the disability, a fear of the unknown, the fear of bad performance and accommodations in the workplace made employers reluctant to employ people with disabilities (Kaye, Jans, & Jones, 2011).

Participants in this study who returned to displaced workplaces appeared to integrate better into the workplace than those who returned to an unaffected workplace. Milligan (2003) explained the phenomenon of displacement and identity, discontinuity and nostalgia. A displacement (loss experience) leads to an identity discontinuity that causes nostalgia which, in turn, results in the establishment of a new identity category. In the case of the injured participants their nostalgia for their previous workplace brought them together with other co-workers who also needed to re-establish their identity continuity and recover from their loss. In comparison, when the injured participants were the only person injured and returned to an undamaged workplace, it appeared for the non-injured co-workers, their workplace was somewhere they felt
normal in an otherwise disrupted environment, and changes to the workplace necessitated by the return of their injured colleague may have disrupted their normality and routines.

In essence, the injured participants showed a paradoxical desire to be treated normally without enduring the label and stigma of disability but, equally, wanted adaptations and support from their workplace. This paradox has also been identified in cancer patients (Kennedy et al., 2007; Parsons et al., 2008). Other studies have shown that labels of disability or normality can cause concern or upset for different reasons as people with a disability struggle with their new identity (Nochi, 1998). The provision of information on specific disability issues may make workplaces better equipped to assist RTW of an injured employee. In this study, connections between the injured participant and the workforce through collegial visits or physical connection with work was helpful, such as through consultative involvement or clearing emails and light duties from home. However, in other studies this has been shown to be both helpful and detrimental to the RTW process (Tjulin, MacEachen, & Ekberg, 2011).

9.6 Implications for practice

This research identified both earthquake specific and general RTW issues which may influence clinical practice. Consequently, some of these implications may be transferable to other patient groups and contexts. The influences identified at each RTW phase (Section 8.5) could be used as a guideline by vocational professionals and insurance providers to identify possible barriers and facilitators at the different stages of the RTW journey.

A number of issues on RTW were identified that could impact the general trauma population (Table 9.1). These include information communication between stakeholders, increased support for the wider family unit, the focus on gym-based rehabilitation and the acknowledgment of non-remunerative work roles.
Table 9.1 General return-to-work issues and recommendations for practice

<table>
<thead>
<tr>
<th>Issue</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clients have unrealistic expectations about recovery and RTW.</td>
<td>- Insurers, health professionals and vocational professionals to provide realistic information about rehabilitation and RTW.</td>
</tr>
<tr>
<td>Lack of information:</td>
<td>- Better communication about weekly compensation</td>
</tr>
<tr>
<td>Poor understanding of weekly compensation support from ACC.</td>
<td>- Variety of methods of communication available</td>
</tr>
<tr>
<td>Lack of information provided to employers</td>
<td>- More frequent communication</td>
</tr>
<tr>
<td>Lack of information provided to co-workers.</td>
<td>- Better communication /more involvement with employers</td>
</tr>
<tr>
<td>Lack of acknowledgement of needs not covered by insurance provider</td>
<td>- Better communication /more involvement with co-workers</td>
</tr>
<tr>
<td></td>
<td>- Full assessment of needs</td>
</tr>
<tr>
<td></td>
<td>- Identification of the needs covered/not covered following assessment</td>
</tr>
<tr>
<td>Lack of support for family unit.</td>
<td>- More inclusion of the family in goal setting</td>
</tr>
<tr>
<td></td>
<td>- Inclusion of the family in psychological support</td>
</tr>
<tr>
<td>Lack of physical rehabilitation within the workplace.</td>
<td>- Increase rehabilitation at workplace</td>
</tr>
<tr>
<td>Focus on employment with little consideration of the broader concept of work.</td>
<td>- Assistance to achieve non-remunerative work activities.</td>
</tr>
<tr>
<td>Failure to meet RTW timeframes.</td>
<td>- Strategies for clients who fail to meet realistic RTW goals.</td>
</tr>
</tbody>
</table>

In addition, there are issues specific to RTW after an earthquake, which include: media communication, provision and length of psychological support and education of health providers (Table 9.2).
### Table 9.2 Return to work issues following an earthquake and recommendations for practice

<table>
<thead>
<tr>
<th>Issue</th>
<th>Recommendation</th>
</tr>
</thead>
</table>
| Missed injuries or poor initial documentation of sustained injuries. | • Provision to add retrospective injuries to documentation  
• Clearly documented plans for transfer of care of patients - including who is responsible for providing follow up for different injuries so none are missed in the transfer process  
• Time frames for review by a local specialist on return to the home centre |
| Perceived disparity of entitlements for RTW between individuals with same/ similar injuries from the same event. | • A disaster manager overseeing all the staff dealing with clients from the same event to provide more equitable care/support for all injured survivors of the disaster  
• Provision of a higher level of decision making for any difficult decisions, media liaison and liaison with other agencies such as EQC, for housing modifications |
| High levels of media interest in people injured in earthquake.      | • Media liaison officer, possibly funded through the Earthquake commission                                                                  |
| Safety of the workplace.                                            | • Provision of short lay reports of building safety which include the dates of assessments and the qualifications of the person undertaking the assessment  
• Direct contact with the injured person to reassure them the workplace is safe |
| Disruption of housing.                                              | • Better inter-agency communication/work  
• In NZ the development of policies to deal with EQC  
• Revised protocols for disaster situations, so housing decisions can be fast-tracked, may not only reduce unnecessary repairs being completed which will then be removed for housing modifications but speed up the RTW process |
| Lack of access to support networks.                                 | • Access to support groups for people with all levels of injury, preferably set up by survivors or in conjunction with injured survivors  
• Repeated offers of support |
| Ongoing psychological issues from the earthquake.                   | • Workplace intervention for multi-casualty workplaces/high impact workplaces  
• Longer time frames on intervention options  
• Training for vocational providers |

Tables 9.1 and 9.2 have identified the issues that influence RTW in trauma populations and earthquake populations, respectively.
Therapists working with injured persons after discharge during the achieving work stage could facilitate RTW by providing options for treatment/intervention outside work hours, or incorporating exercise programmes within the workplace to improve an injured person’s ability to balance RTW and recovery. Provision of a clear pathway of progression through the graduated RTW programme with clearly documented penalties for failing to achieve them may be useful in assisting RTW planning and goal setting. Such as a graduated reduction in compensation payments if the injured person was not fully participating in the plan to achieve their goals i.e. failing to attend vocational rehabilitation sessions or going to work. 

Employer flexibility and co-worker support appeared to make a big difference to RTW, including discussions with the returning injured employee to encourage disclosure of injuries. In addition, specific interventions targeted at educating employers and co-workers about the returning employee’s injury may improve their understanding of the returning employee’s capabilities and injury-related accommodation needs and create a better working environment. On-going engagement with the employer by vocational professionals and/or insurance providers, including regular contact, may assist the RTW transition and promote work sustainability. In addition, prolonged engagement by the vocational provider with the injured client could offer an opportunity to discuss work advancement. The inclusion of co-workers in all stages of RTW may aid the success of accommodations in the workplace, and improve practical and emotional support for the injured person.

The option to have clients’ needs and goals assessed even if they are not provided by the insurance provider may enhance engagement in RTW, facilitating informed decisions from the clients in considering all their options. People could then have the option to self-fund or find alternative funding providers to achieve outcomes they wish to pursue, but are not available through their insurers. In addition, flexibility around the provision of psychological assistance, so clients could include family or workplace based intervention may accelerate RTW.

In the earthquake situation, providing information on the safety of workplaces, such as access to lay reports and verification of the qualifications of the person who completed the report may reassure injured earthquake survivors and enhance RTW. Support for an injured person is important for RTW in any situation, although after an earthquake a
person’s usual form of social support may be affected. Access to appropriate support
groups or peer support may be beneficial for all injured persons not just those who
sustain a TBI or SCI. Such support groups could be used to provide formal or informal
RTW information as well as support. After an earthquake access to earthquake-specific
support groups may be beneficial and more helpful than injury-specific peer support
alone. In either circumstance, these groups are more likely to be successful if they are
organised by, or in conjunction with, the injured survivors so their needs and concerns
can be addressed.

To achieve these outcomes, additional resources may be required for injured earthquake
survivors compared to non-earthquake trauma. Currently RTW timeframes are
impairment based although other psychological and personal factors are taken into
account. For injured earthquake survivors RTW timeframes may need be extended and
incorporate additional hours to facilitate the extra input for the physiological and
personal factors needed to achieve a successful RTW.

9.7 Credibility, originality, resonance and usefulness
Charmaz (2014) argued it is important to contextualise a grounded theory study,
allowing people to decide if and how, comparisons can be made and if more general
theories can be developed. This grounded theory was developed in NZ after a major
earthquake, so decisions around the transferability of this information must take the
context into consideration. Constructivist grounded theory has specific measures of
rigour, namely: credibility, originality, resonance and usefulness (Section 5.6). I will
now address the rigour of this grounded theory study using these criteria.

9.7.1 Credibility
Credibility is achieved through generating data that is able to substantiate the claims
made in the research. This research was enhanced by the time involved interacting with
the injured participants (Thomas & Magilvy, 2011). In this study two interviews were
conducted with the injured participants over a two-year period. In addition, member
checking of the transcripts and clarification of questions and correspondence with the
participants were performed. The inclusion of participants from different stakeholder
perspectives increased the opportunities to make comparisons of experiences and aided
analysis.
To improve credibility, one supervisor read all the research transcripts and my regular discussions with all the supervisors allowed exploration of different interpretations of the data. Links between the data collected and the theory developed are demonstrated in the multiple quotations provided in the results section, which allow the reader to form their own view of my interpretation of the data.

9.7.2 Originality
Originality is judged by the significance of the research socially and theoretically. This research offers unique insights into the differences in RTW following an earthquake injury, a topic with little research, not previously explored qualitatively, or in a developed country. The implications of this research are the provision of a theory that provides understanding of the different phases in the RTW process and identifies earthquake-specific factors which create barriers and/or facilitators to work. Socially, this may contribute to understanding of the system and provision of RTW services within NZ.

9.7.3 Resonance
Resonance looks at how true the research is. Member checking was used during the research process to ensure the theory resonated with the study participants. The discussion section has demonstrated how the findings from this study align with the RTW literature, indicating links from these results to the general trauma population. The substantive theory developed provides a greater understanding of RTW after an earthquake injury and previously undocumented insights into RTW in a post-earthquake environment in a developed country.

9.7.4 Usefulness
Usefulness evaluates the contribution of knowledge from the research. This research contributes an understanding of the interactions of factors that can impact on RTW in an earthquake environment. The inexorable nature of earthquakes means that in the future other injured earthquake survivors will need to be assisted to RTW in the hostile environment of a post-earthquake situation. This theory provides a framework which identifies possible barriers and facilitators to the RTW process. It also provides information within the NZ context. This could be used to facilitate awareness of the complex interaction of multiple influences on returning to work after a traumatic injury,
as well as provide a framework to address the needs of injured individuals at different phases of the RTW process.

**9.8 Strengths and limitations**

This research was undertaken in NZ and the specific contextual conditions of the post-earthquake environment in Christchurch and the compensation system may limit how these results can be applied in other contexts. However, there are findings that may be applicable in other trauma situations, and aspects of the research are supported by models and conceptualisations of RTW from other contexts (Dunstan & MacEachen, 2014; Wright & Kirby, 1999; Young, Roessler, et al., 2005).

The strength of this research was the longitudinal follow up of the injured participants over the three years after the earthquake. The inclusion of two time points for the interviews a year apart, provided important information about the changes in RTW over time. A single time point study may have missed valuable information about the stages in the process and the importance of different influences across the different stages of RTW. Investigating only a single time point may also have underestimated the long term implications of an earthquake injury, especially the emotional response to the earthquake, which was still evident three years after injury. Most previous qualitative work on RTW has interviewed participants at only one time point (Chan & Man, 2005; Chapin & Kewman, 2001; Fadyl & McPherson, 2010; Hay-Smith et al., 2013).

Another strength was the inclusion of multiple stakeholders; however, it does not include the voices of the employers or co-workers. Although attempts were made to contact employers involved in the RTW of injured earthquake survivors, they were difficult to access without approaching the employers of injured participants who consented to participate; and this would change the methodology into a case study methodology and make maintaining anonymity difficult. Data collection from health professionals involved in the rehabilitation of the injured participants and family members could also have provided a wider perspective of RTW. In addition, there may have been benefit from interviewing people who sustained non-earthquake trauma at the time of the earthquake and their RTW process over the same time period of the injured participants.
While opportunities were sought to include participants with a non-European background, the participant cohort does not represent the cultural diversity of NZ. However, the Christchurch population is predominantly NZ European, and the recruitment reflected the overall characteristics of the injured earthquake survivors who were predominantly older, women, and NZ European. The majority of the injured participants had good educational backgrounds and were in white collar work, which may have influenced the outcomes of the study.

Although I initially hoped to record Injury Severity Scores (ISS) of the injured participants, these were not routinely collected at the time of injury, and although this information was gathered retrospectively from the RHISE database, issues with missing data meant it was not available for all the participants in the study, and was therefore not included. It would be useful to record this information prospectively in future studies; however, it is acknowledged that data capture in a disaster situation is particularly difficult, due to the high volume of people injured, and the lack of health professionals experienced in assigning ISS scores.

The shared experience of the earthquake was identified as an important influence in RTW in this study. I was in Christchurch and experienced the earthquake, although I did not sustain an injury. I was, therefore, not a true insider but I did have a good understanding of the topic. This can be considered as both an advantage and a disadvantage to the research. The participants often asked what my experience of the earthquake was. Knowing I was in Christchurch for the earthquake and worked in the hospital may have made it easier for the participants to recount their stories as they felt I could understand their experiences. However, my earthquake experience could have influenced my interpretation of the participants’ experiences and may have affected what information the participants shared. Similarly, my pre-existing role as one of the clinicians involved in the care of five of the participants may have improved rapport in the interviews, but may also have influenced their responses as they were aware of my involvement with the Burwood Spinal Unit and the Kaleidoscope vocational service. However, my shared experience and therapeutic relationship were key factors in the choice to use a constructivist grounded theory approach which acknowledges the co-construction of the data between the researcher and the research participants, and I consider my previous knowledge strengthens my theoretical sensitivity.
9.9 **Self-reflection on the research process**

Living in Christchurch during the process of this research has provided me with my own earthquake experiences, including many aftershocks, and the altered environment of Christchurch as it ‘rebuilt’. This has inevitably influenced my thinking and perspectives of the research question over the duration of this research. Initially, I was concerned that my experience could bias my interpretation of the data but, with time and stringent adherence to the methodology, I came to consider my experiences to be an advantage as they provided me with insights, albeit at very different level from the participants’ experiences. From a constructivist viewpoint this has given me another perspective from which to examine the data, and this insider perspective has been balanced by having a supervisor outside Christchurch, who was not involved in the earthquakes, to provide an external validation that the results are grounded in the data.

In the planning stages of the research I underestimated the extent of the physical changes to the Christchurch environment, and the time it would take for the city to rebuild. At the completion of this thesis, the demolition of buildings in the city centre is still not completed. I am grateful that I planned to follow up the injured participants for two to three years after their injury.

Using the grounded theory methodology proved challenging, from interpreting the theoretical differences in the methodology, which are passionately debated in the literature, to dealing with the sheer number of codes created in the first interview alone. I found that the ‘emergence’ of concepts from the data was not as simple as the literature implied and moving from descriptions to conceptualisation was a skill that took some time to acquire. A grounded theory master class with Kathy Charmaz, (the grounded theory approach used in this thesis) I completed in the final year of this study reassured me that I had followed the criteria for constructivist grounded theory. The class also highlighted the contribution descriptive data can make, even if full conceptualisation into theory may not be achieved.

I feel privileged to have listened to the stories of the injured earthquake survivors, and to have gained an insight into the perspectives of the vocational professionals and ACC participants I interviewed. By using grounded theory I feel I have kept true to the data and accurately represented the different perspectives of my participants.
9.10 Future research

This thesis highlights further research opportunities to understand and improve RTW outcomes following earthquakes in developing countries. Prospective research is difficult to initiate in a post-disaster environment experienced after an earthquake (Phillips, 2014), but comparisons of RTW for injured and non-injured earthquake survivors using a prospective cohort approach could further highlight earthquake-specific factors.

Quantitative testing to verify the RTW framework created in this study is required in other injured earthquake survivors. In addition, research to test the applicability of the framework to non-earthquake trauma patients in NZ is recommended.

Longitudinal RTW studies are required that follow participants over the entire RTW process, including work sustainability and advancement, to provide understanding of the RTW stages and how people with injuries adapt and change their work over time. Time frames of at least five years may be necessary to capture information on all the RTW stages.

More research looking at the impact of co-workers and employers on RTW is needed. A qualitative case series approach may be a good way of assessing this. In addition, it would be valuable to use intervention studies to investigate the impact education about disabilities and the influence of disclosure about the injury had on RTW outcomes.
10 Conclusions

This study explored the RTW outcomes for people injured in the Christchurch earthquake. The main contribution of this thesis was in producing a constructivist grounded theory to understand RTW after injury in an earthquake that was grounded in the data from interviews with injured survivors of the Christchurch earthquake, ACC employees and vocational professionals involved in the RTW process. This theory demonstrated that RTW after an earthquake injury was a complex process, involving the interaction of multiple stakeholders and taking place in a unique social and physical, and political environment. The theory shows the importance of recovery from the injury on the RTW process, the influence from the RTW system or insurer and the unique factors of a post-earthquake environment which influenced the RTW journey. The theory has shown the changes over time for the injured earthquake survivors of the Christchurch earthquake as they transitioned through three stages of RTW: (1) planning and preparing for work; (2) achieving work; and (3) maintaining work.

The first phase of this study, a systematic review on participation and QoL outcomes in physically injured earthquake survivors identified the limited literature on this subject. This review showed low RTW rates for injured earthquake survivors in developing countries (Delauche et al., 2013; Hu et al., 2012; Roy et al., 2005; Tasiemski et al., 2010; Zhang, X. et al., 2012). None of these studies specifically focused on work, and no specific information on the types of job, hours of employment, or explanations to understand the differences in the post-earthquake situation were provided. No studies were from developed countries, and the findings from the systematic review had limited contributions to the grounded theory model.

The second phase of this study used grounded theory, which produced explanations of a phenomenon grounded in the data collected. The theory of negotiating RTW after an earthquake injury showed a progressive pathway of recovery from injury to RTW. The injured earthquake survivors negotiate three distinct phases of RTW and balanced RTW with physical and emotional recovery and then other aspects of their lives in the unique post-earthquake environment.

This research has a number of applications. These findings illustrate specific implications from RTW in an earthquake affected environment. As earthquakes are an inevitable natural disaster the findings of this research could be used on an international
level to guide vocational intervention for injured earthquake survivors. The findings indicated the need to verify and communicate the safety of workplaces following an earthquake to assist the RTW process. Ongoing PTSD symptoms may influence the process and experience of RTW. Emotional recovery in injured survivors appeared to be related to the earthquake experience and may be more noticeable in the less injured earthquake survivors; so long term surveillance and treatment of psychological issues are needed to deal with the emotional recovery from the earthquake injury and this would facilitate RTW. In addition, this research has indicated the organisation of peer-initiated support groups can provide beneficial emotional and practical support to earthquake injured survivors. Peer support could be used as a forum for education on emotional recovery and vocational issues.

The findings from this thesis showed that workplace support, both from the employer and co-workers, can have a positive impact on RTW. It substantiated previous research findings in the area (Dunstan & MacEachen, 2013, 2014; Tjulin, MacEachen, Edvardsson Stiwne, & Ekberg, 2011; Tjulin, MacEachen, & Ekberg, 2010), but uniquely contributes the importance of the shared experience in an earthquake situation, where the workplaces with the highest impact from the earthquake showed the most empathy and support. A shared experience can positively influence co-workers’ acceptance of adaptations in the workplace, and determine the amount and type of support provided for the returning injured earthquake survivor. This study raises the possibility that co-workers as well as employers need information about the RTW plan of the injured employee and workplace accommodations. One method of improving the success of workplace accommodations may be to develop strategies for the disclosure of injuries, including the side effects of injuries. In addition, it may be beneficial to include co-workers in the RTW process and planning of workplace accommodations, regardless of the cause of injury.

On a national level this study highlighted the benefits of the ACC system in RTW for injuries but showed a tension between the expectations of the injured person and the legislative guidelines. At present, rehabilitation systems do not appear to be flexible enough to accommodate the recovery needs of the injured person around their RTW commitments. There appeared increased difficulty to RTW after serious injuries, which may be related to ACC procedure which does not differentiate the RTW process for serious and non-serious injuries - distinct RTW pathways may be required for the
different injury groups. Future research on RTW should acknowledge the different time frames of RTW for different injury groups, as the RTW rate for serious injuries may be underestimated by research undertaken within the first two years of injury, where outcomes are recorded at a single time point. The research questions the possibility of using a goal-orientated RTW process within the ACC system when the various RTW stakeholders hold different conceptualisations of successful RTW, and the system’s legislation is based around injury needs rather than clients’ goals.

RTW for many injured people is a complex process. This work has contributed novel understandings of that complexity by investigating those injured in the Christchurch earthquake. The findings have direct relevance for rethinking how to manage the complexity of RTW after an earthquake. However, by considering the specific context of injury, recovery and RTW created by the earthquake, many more opportunities to enhance the return to work process have been highlighted.

Nobody looks at anything from the big picture, they only look at their own little wee tiny areas, they don’t stand back and holistically look at someone’s life, and how they might do things. They say they do. They put all things down on a piece of paper which say they are going to go through and work on a plan, but the plan is more about their requirements to reduce costs, not really rehabilitate people... I think giving; enabling the individuals to make decision for people would be good.

Evelyn (Interview 1)
References


Foreman, P., Murphy, G., & Swerissen, H. (2006). Barriers and facilitators to return to work: A literature review: Australian Institute for Primary Care, La Trobe University, Melbourne.


return to employment in New Zealand after spinal cord injury. *Disability and Rehabilitation, 35*(17), 1436-1446.


Nunnerley, J. L. (2008). The experience of leaving a spinal unit and returning to the wider community. (Master of Health Science (Rehabilitation)), University of Otago, Dunedin, New Zealand.


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Appendix A: Systematic review search strategy

1. Fracture$.mp.
2. Exp injuries/
3. Exp orthopaedic
4. Exp Trauma/
5. Exp multiple trauma/
11. Exp Brain injury/
12. Disab$.mp.
13. Exp Amputation/
14. Exp Amputation, Traumatic/
15. Amputation.mp.
16. 1-15
17. Exp earthquake
18. Earthquake$.mp.
20. Disaster$.mp.
21. Exp disaster/
22. Or/ 17-21
23. Exp Work/
24. Exp Employment/
25. Return to work.mp. or Return-to-work.mp.
26. Return to employment.mp.
27. Exp Absenteeism/
28. Unemployment.mp.
29. Sick leave.mp.
30. Sick$ absence.mp.
31. Sick list$.mp.
32. Time off work.mp.
33. Workloss.mp.
34. Work loss.mp.
35. Work resumption.mp.
36. Work disability
37. Or/ 23–36
38. Participation.mp.
40. Exp Quality of Life/
41. Health outcomes.mp.
42. Health related quality of life.mp.
43. SF 36.mp.
44. Whoqol.mp.
45. Or/38-44
46. 16 and 22 and 37 or 45
47. Limit to English language only
48. Limit to humans
Appendix B: Ethics approval

Upper South B Regional Ethics Committee
Ministry of Health
6 Hazeldean Road, Level 1 Montgomery Watson Building
Addington, Christchurch
Phone: (03) 974 2365
Email: uppersouthb_ethicscommittee@moh.govt.nz

3 April 2012

Ms Joanne Nunnerley
University of Otago - Christchurch School of Medicine
Department of Orthopaedic Surgery & Musculoskeletal Medicine
P.O Box 4345
Christchurch 8140
New Zealand

Dear Ms Nunnerley

Re: Ethics ref: URB/12/02/004 (please quote in all correspondence)
Study title: Within the context of the ICF framework, what are the influences on return to employment/productivity in individuals injured as a result of the Christchurch earthquake?
Investigators: Ms Joanne Nunnerley, Dr Tim Woodfield, Associate Professor Gary Hooper, Professor Kathryn McPherson

This study was given ethical approval by the Upper South B Regional Ethics Committee on 3 April 2012. A list of members of the Committee is attached.

Approved Documents
— Participant consent sheet Version 2_Feb 2012
— Participant information sheet Version 2_Feb 2012
— Ethics application-form PhD_Resubmission March 2012

This approval is valid until 11 November 2014, provided that Annual Progress Reports are submitted (see below).

Access to ACC
For the purposes of section 32 of the Accident Compensation Act 2001, the Committee is satisfied that this study is not being conducted principally for the benefit of the manufacturer or distributor of the medicine or item in respect of which the trial is being carried out. Participants injured as a result of treatment received in this trial will therefore be eligible to be considered for compensation in respect of those injuries under the ACC scheme.

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Amendments and Protocol Deviations
All significant amendments to this proposal must receive prior approval from the Committee. Significant amendments include (but are not limited to) changes to:
- the researcher responsible for the conduct of the study at a study site
- the addition of an extra study site
- the design or duration of the study
- the method of recruitment
- information sheets and informed consent procedures.

Significant deviations from the approved protocol must be reported to the Committee as soon as possible.

Annual Progress Reports and Final Reports
The first Annual Progress Report for this study is due to the Committee by 3 April 2013. The Annual Report Form that should be used is available at www.ethicscommittees.health.govt.nz. Please note that if you do not provide a progress report by this date, ethical approval may be withdrawn.

A Final Report is also required at the conclusion of the study. The Final Report Form is also available at www.ethicscommittees.health.govt.nz.

Requirements for the Reporting of Serious Adverse Events (SAEs)
SAEs occurring in this study must be individually reported to the Committee within 7-15 days only where they:
- are unexpected because they are not outlined in the Investigator’s brochure, and
- are not defined study end-points (e.g. death or hospitalisation), and
- occur in patients located in New Zealand, and
- if the study involves blinding, result in a decision to break the study code.

There is no requirement for the individual reporting to ethics committees of SAEs that do not meet all of these criteria. However, if your study is overseen by a data monitoring committee, copies of its letters of recommendation to the Principal Investigator should be forwarded to the Committee as soon as possible.

Please see www.ethicscommittees.health.govt.nz for more information on the reporting of SAEs, and to download the SAE Report Form.
Statement of compliance
The committee is constituted in accordance with its Terms of Reference. It compiles with the Operational Standard for Ethics Committees and the principles of international good clinical practice.

The committee is approved by the Health Research Council’s Ethics Committee for the purposes of section 25(1)(c) of the Health Research Council Act 1990.

We wish you all the best with your study.

Yours sincerely

Diana T. Whipp

Mrs Diana Whipp
Administrator Upper South B Regional Ethics Committee
Email: uppersouthb_ethicscommittee@moh.govt.nz
Appendix C Participant information and consent sheet injured participants

Department of Orthopaedic Surgery & Musculoskeletal Medicine

Christchurch School of Medicine & Health Sciences, University of Otago

INFORMATION SHEET

The influences on employment/productivity in individuals injured as a result of the Christchurch (February 22nd) earthquake

You are invited to participate in this study looking at the influences on employment/productivity in individuals with moderate or severe injuries as a result of the Christchurch February 22nd earthquake.

Who is doing this study?
The lead investigator on this study is Jo Nunnerley, Jo is a physiotherapist and she is completing a PhD at the University of Otago. Her supervisors for this project are Dr Tim Woodfield, Dr Jennifer Dunn and Associate Professor Gary Hooper from the University of Otago, Professor Kath McPherson from AUT University. Dr Deborah Snell is the clinical advisor for this study.

What is the purpose of this study?
The aim of this study is to gather information on the influences in a return to employment/normal daily activities following injury in the Christchurch earthquake. It is hoped that this information can be used to identify some of the issues experienced in this process and highlight what can be done to assist in this process. We would value your participation in this study.

Why have I been asked and is participation voluntary?
We have contacted you because you were injured in the February 22nd earthquake. Your participation in this study about employment/productivity after injury as a result of the Christchurch earthquake is entirely voluntary: you are free to decline. You have the right to change your mind at any time without explanation. Declining or withdrawal will not affect your future health care in any way.

If I agree to take part, what will the study involve?
If you decide to take part in this study you will be asked to sign the consent form. You may have a friend, family or whānau support to help you understand the risks and/or benefits of this study and any other explanation you may require. The study will involve two in depth face-to-face interviews lasting up to 60 minutes, one now and another in twelve months’ time. You do not have to answer all the interview questions, and you may stop the interview at any time. The interviews will be informal and will take place at a time and place convenient for you. You may have a support person present during the interview if you wish. A translator can be made available, if required, or a family member can translate for you.

What will happen to the information I provide?
All the information you provide will be kept confidential. The interview with the researcher will be digitally recorded, and this recording will be typed out and looked at only by the research team. We will be looking for common themes on the influences on a return to employment/normal daily activities following injury in the Christchurch earthquake. Your name will be changed on the typed copy so no-one, apart from the researcher who interviews you, will know who made a particular comment. You will be asked if you would like to have your recording returned to you at the end of the study. If you do not want the recording, it will be destroyed. You will also be sent a copy of the typed interview so you can make any changes or add any other comments. All other information collected for this study is confidential and kept secure, and no material that could personally identify you will be used in any reports on this study. You will be able to obtain a copy of the results at the end of the study if you wish. Please note there will be a delay between your participation in the study and receiving these results.

Who can I ask if I would like more information about the study?

If you would like any further information on this study or have any questions feel free to contact:

Principal Researcher
Jo Nunnerley
Department of Orthopaedic Surgery & Musculoskeletal Medicine
University of Otago, Christchurch
PO Box 4345
Christchurch 8140
New Zealand Christchurch
Phone 03 383 - 9487
Email:Jo@ResearchAndRehab.com

Researcher
Associate Professor Gary Hooper
Phone 03-355 - 3302
Position Researcher

Researcher
Professor Kathryn McPherson PhD
Phone +64 9 921-9999 ext 7110
Position Researcher

Researcher
Dr Tim Woodfield
Phone 03-361 - 1086
Position Researcher

Researcher
Dr Jennifer Dunn
Phone 021 – 136 - 4079
Position Researcher

What do I do now?

If you wish to participate in this study: Please keep this information sheet and return the Consent Form in the pre-paid envelope within the next seven days.

Thank you

If you have any queries or concerns regarding your rights as a participant in this research you may wish to contact an independent Health and Disability Advocate.

Free phone: 0800 555 050 Free fax: 0800 2 SUPPORT (0800 2787 7678) Email: advocacy@hdc.org.nz
South Island: 0800 377 766

Email (NZ wide) advocacy@hdc.org.nz

This study has been approved by Upper South B Regional Ethics Committee, Ministry of Health, Christchurch, Ref URB/12/02/004.
March 2012

Department of Orthopaedic Surgery & Musculoskeletal Medicine

Christchurch School of Medicine & Health Sciences, University of Otago

Consent Form

NAME OF STUDY: *The influences on return to employment/productivity in individuals injured as a result of the Christchurch earthquake*

REQUEST FOR INTERPRETER

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<td>Io</td>
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</table>

I have read and I understand the **information sheet** dated February 2012 for volunteers taking part in the study designed to explore the influences on return to employment/productivity/usual daily activities in individuals seriously injured as a result of the Christchurch earthquake.  

Yes/ No

I have had the opportunity to discuss this study and I am satisfied with this answers I have been given.  

Yes/ No

I have had the opportunity to use whānau or a friend to help me ask questions and understand the study.  

Yes/ No
I also understand that taking part in this study is voluntary (my choice) and that I may withdraw at any time without having to give a reason and this will in no way affect my future health care.  

I would like my GP to be informed of my participation in this study.  

I understand that taking part in this study is confidential and that no material, which could identify me, will be used in any reports on this study.  

I agree to my interviews being recorded  

I wish to receive a copy of the results.  

I would like the researcher to discuss the outcomes of the study with me personally  

I would be happy to be contacted for other studies  

I_________________________________(full name) hereby consent to take part in this study.

Signature__________________________ Date________________

Explaining Researcher (Name)____________________________

(Signature)________________________________________

Lead Principal Researcher
Joanne Nunnerley  
Phone 03-383 - 9487  
Jnunnerley@ResearchAndRehab.com

Associate Professor Gary Hooper  
Phone 03-355 - 3302  
Position Researcher

Professor Kathryn McPherson PhD  
Phone 09 921-9999 ext 7110  
Position Researcher

Dr Tim Woodfield  
Phone 03-364 - 1086  
Position Researcher

Dr Jennifer Dunn  
Phone 021 – 136 - 4079  
Position Researcher
Appendix D Participant information and consent sheet professionals
Department of Orthopaedic Surgery & Musculoskeletal Medicine

Christchurch School of Medicine & Health Sciences, University of Otago

INFORMATION SHEET

The influences on employment/productivity in individuals injured as a result of the Christchurch (February 22nd) earthquake

You are invited to participate in this study looking at the influences on employment/productivity in individuals with moderate or severe injuries as a result of the Christchurch February 22nd earthquake.

Who is doing this study?
The lead investigator on this study is Jo Nunnerley. Jo is a physiotherapist and she is completing a PhD at the University of Otago. Her supervisors for this project are Dr Tim Woodfied, Dr Jennifer Dunn and Associate Professor Gary Hooper from the University of Otago, and Professor Kath McPherson from AUT University. Dr Deborah Snell is the clinical advisor for this study.

What is the purpose of this study?
The aim of this study is to gather information on the influences in a return to employment/normal daily activities following injury in the Christchurch earthquake. It is hoped that this information can be used to identify some of the issues experienced in this process and highlight what can be done to assist in this process. We would value your participation in this study.

Why have I been asked and is participation voluntary?
We have contacted you because you were involved in the return to work/productivity process of someone who was injured in the February 22nd earthquake. Your participation in this study about employment/productivity after injury as a result of the Christchurch earthquake is entirely voluntary: you are free to decline. You have the right to change your mind at any time without explanation. Declining or withdrawal will not affect your future health care in any way.

If I agree to take part, what will the study involve?
If you decide to take part in this study you will be asked to sign the consent form. You may have a friend, family or whānau support to help you understand the risks and/or benefits of this study and any other explanation you may require. The study will involve up to two in depth face-to-face interviews lasting up to 60 minutes. You do not have to answer all the interview questions, and you may stop the interview at any time. The interviews will be informal and will take place at a time and place convenient for you. You may have a support person present during the interview if you wish. A translator can be made available if required, or a family member can translate for you.

What will happen to the information I provide?
All the information you provide will be kept confidential. The interview with the researcher will be digitally recorded, and this recording will be typed out and looked at only by the research team. We will be looking for common themes on the influences on a return to employment/normal daily activities following injury in the Christchurch earthquake. Your name will be changed on the typed copy so no-one, apart from the researcher who interviews you, will know who made a particular comment. You will
be asked if you would like to have your recording returned to you at the end of the study. If you do not want the recording, it will be destroyed. You will also be sent a copy of the typed interview so you can make any changes or add any other comments. All other information collected for this study is confidential and kept secure, and no material that could personally identify you will be used in any reports on this study. You will be able to obtain a copy of the results at the end of the study if you wish. Please note there will be a delay between your participation in the study and receiving these results.

**Who can I ask if I would like more information about the study?**
If you would like any further information on this study or have any questions feel free to contact:

**Principal Researcher**
Jo Nunnerley  
Department of Orthopaedic Surgery & Musculoskeletal Medicine  
University of Otago, Christchurch  
PO Box 4345  
Christchurch 8140  
New Zealand Christchurch  
Phone 03 383 - 9487  
Email: Jo@ResearchAndRehab.com

**Researcher**  
Associate Professor Gary Hooper  
**Position** Researcher  
**Phone** 03-355-3302

**Researcher**  
Dr Tim Woodfield  
**Position** Researcher  
**Phone** 03-364-1086

**Researcher**  
Professor Kathryn McPherson PhD  
**Position** Researcher  
**Phone** +64 9 921-9999 ext 7110

**Researcher**  
Dr Jennifer Dunn  
**Position** Researcher  
**Phone** 021-136-4079

**What do I do now?**
If you wish to participate in this study: Please keep this information sheet and return the Consent Form in the in the pre-paid envelope within the next seven days.

Thank you

*If you have any queries or concerns regarding your rights as a participant in this research you may wish to contact an independent Health and Disability Advocate.*

Free phone: 0800 555 050 Free fax: 0800 2 SUPPORT (0800 2787 7678) Email: advocacy@hdc.org.nz  
South Island: 0800 377 766  
Email (NZ wide) advocacy@hdc.org.nz

This study has been approved by the Upper South B Regional Ethics Committee, Ministry of Health, Christchurch, URB/12/02/004
CONSENT FORM

NAME OF STUDY: The influences on return to employment/productivity in individuals injured as a result of the Christchurch earthquake

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<td>Oku ou fiema’u ha fakatonulea.</td>
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I have read and I understand the information sheet dated [version approved by ethics committee] ____________ for volunteers taking part in the study designed to explore the influences on return to employment/productivity/ usual daily activities in individuals seriously injured as a result of the Christchurch earthquake. Yes/ No

I have had the opportunity to discuss this study and I am satisfied with this answers I have been given. Yes/ No

I have had the opportunity to use whānau or a friend to help me ask questions and understand the study. Yes/ No
I also understand that taking part in this study is voluntary (my choice) and that I may withdraw at any time without having to give a reason and this will in no way affect my future health care. Yes/ No

I would like my GP to be informed of my participation in this study. Yes/ No

I understand that taking part in this study is **confidential** and that no material, which could identify me, will be used in any reports on this study. Yes/No

I agree to my interviews being recorded. Yes/ No

I wish to receive a copy of the results. Yes/No

I would like the researcher to discuss the outcomes of the study with me personally Yes/No

I would be happy to be contacted for other studies. Yes/No

I________________________________(full name) hereby consent to take part in this study.

Signature__________________________ Date________________

Explaining Researcher (Name) _____________________________

(Signature)_________________________________________

**Lead Principal Researcher**
Joanne Nunnerley
Phone 03-383-9487
Jonunnerley@ResearchAndRehab.com

Associate Professor Gary Hooper
Phone 03-355-3302
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**Position** Researcher

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Phone 03-364-1086
**Position** Researcher

Dr Jennifer Dunn
Phone 021-136-4079
**Position** Researcher
Appendix E: Interview schedule year one - injured earthquake participants not returned to work

One year post injury interview schedule for participants who have NOT returned to work/study

Introduction and Preparation
Introduction of self and research
Sign consent form
Explain procedure
Check tape-recorder is working
Start recording

Tell me your experience; I want to hear the story in your own words. After you have completed your storytelling, then if I have further questions or something is not clear I will ask you. But for now just talk freely.

Initial open ended questions
1. Can you tell me about your work/study/how you spent your day prior to the February 22nd earthquake?
   a. How many hours a week were you working/involved in that activity?
   b. What was involved in doing that work/study/normal activity?
2. How would you describe the changes to how with you spend your day now?
   a. Physical activity
   b. Injury related changes
   c. Situation
3. Why have you decided not to go back to work/study/how you spent your day
4. Can you tell me as much as you are comfortable with, what happened to you on February the 22nd?
5. What if any difference has the earthquake made to how you spend your day?
   What if any difference has your injury made on how you spend your day?
   a. Physical difficulties
   b. Emotional difficulties
6. What would you say are your priorities in life now? How have these changed since your injury/the earthquake?
7. What was going on in your life before the earthquake? How would you describe how you viewed work/study/how you spend your day before then? How if at all has your view of work changed?
8. If I could click my fingers and produce a return to work pathway for you what would it look like?
Intermediate questions

9. What are the main influences on making the decision to go back to work or not?
   a. What have been helpful influences?
   b. What has been a hindrance?

10. Who has been the most helpful to you during this time? How have they been helpful?

11. Could you describe any problems you encountered since your injury? How have you dealt with these?

12. What are the primary things that have helped you through the difficult times?

13. Is there anything else you think I should know that will help me understand the influences on your decisions about return to work better?

Ending Questions

• Tell me about your views on work may have changes since your injury?

• After deciding not to return to work/return what advice would you give to someone else in your situation?

• Do you have any suggestions on how rehabilitation facilities/providers could help/change/the process/your decision?

• Is there anything you would like to ask me?

• Would you be happy for me to contact you with any questions that might arise when I analyse these?

• What is the best way for me to contact you?

• Would you prefer a printed or email copy of your transcript?

Thank you for your help.
Appendix F: Interview schedule year one - injured participants’ who have returned to work

One year post injury interview schedule: for participants who have returned to work/study.

Introduction and Preparation
Introduction of self and research
Sign consent form
Explain procedure
Check tape-recorder is working
Start recording

Tell me your experience I want to hear the story in your own words. After you have completed your storytelling, then if I have further questions or something is not clear I will ask you. But for now just talk freely.

Initial open ended questions
1. Can you tell me about your work/study/how you spent your day prior to the February 22nd earthquake?
   a. How many hours a week were you working/involved in that activity?
   b. What was involved in doing that work/study/normal activity

2. What if any changes are there with your work/study/how you spend your day now?
   a. Hours
   b. Physical activity
   c. Injury related changes
   d. Situation

3. Why have you made those changes? What made you decide to go back to work/study/how you spent your day?

4. Can you tell me as much as you are comfortable with, what happened to you on February the 22nd?

5. What if any difference has the earthquake made to your work/study/how you spend your day? What if any difference has your injury made on your work/how you spend your day?
   a. Physical difficulties with work
   b. Emotional difficulties

6. What would you say are your priorities in life now? How have these changed since your injury/the earthquake?

7. What was going on in your life before the earthquake? How would you describe how you viewed work/study/how you spend your day before then? How, if at all, has your view of work changed?

Intermediate questions
8. What are the main influences on making the decision to go back to work or not?
   a. What have been helpful influences?
   b. What has been a hindrance?
9. What are the hardest things about being back at work/achieving your daily activities?

10. Who has been the most helpful to you during this time? How have they been helpful?

11. Could you describe any problems you encountered returning to work? How have you dealt with these?

12. What are the primary things that have helped you through the difficult times?

13. The most important lessons you learned about the return to work/study process?

14. Is there anything else you think I should know that will help me understand the influences on your return to work better?

**Ending Questions**

- Tell me about your views on work may have changes since your injury?

- After your experience of returning to work what advice would you give to someone else in your situation?

- Do you have any suggestions on how rehabilitation facilities/providers could help/change/the process/your decision?

- Is there anything you would like to ask me?

- Would you be happy for me to contact you with any questions that might arise when I analyse these?

- What is the best way for me to contact you?

- Would you prefer a printed or email copy of your transcript?

Thank you for your help.
Appendix G: Interview schedule year two - injured participants’ who have returned to work

Introduction and Preparation

Introduction of self and research
Sign consent form
Explain procedure
Check tape-recorder is working
Start recording

Initial open ended questions

Last time we spoke you were (summary of work situation at last interview)

1. What changes are there with your life situation since we last spoke?
   a) Work / social
   b) Hours
   c) Physical activity
   d) Injury related changes
   e) Situation

2. What has led to those changes?

3. How satisfied are you with your work situation now?
   a. Sustaining work

4. How successful has your RTW process been?

5. When you think of the RTW process you have been engaged in, what are the factors that have helped the RTW process?
   a) How did that help?
   b) Tell me what was about that you find so helpful

6. What issues if any are still on-going that related to the earthquake?
   a. housing
   b. insurance
   c. General

7. Can you give me some more examples?

8. Can you think what else would have been helpful that you haven’t had access to?

9. What do you feel are your major achievements over the last year?
10. When we spoke your goals were…Has you achieved these?? What has helped hindered this?

11. How supported have you been over the last year?

12. Where has that support come from?

**Intermediate questions**

13. What are the hardest things about being back at work/achieving your daily activities?

14. Could you describe any problems you encountered with maintaining work? How have you dealt with these?

15. In an ideal world is there anything you would have done differently in RTW?

16. Is there anything that could have been done better by the people working with you?

17. To what degree is your life back to normal?

18. What things would need to happen to make your life “normal” again?

19. Can you summarise your rehab journey and how much is that still part of your life?

20. Is there anything else you think I should know that will help me understand the influences on your return to work better?

**Ending Questions**

21. Tell me about your views on work may have changes since your injury?

22. Now you are another year down the line from your injury, is there any advice you would give to someone else Returning to work in your situation?

23. Initially there was a lot of media coverage over the earthquakes has that changed over the last year?

24. What are your goals over the next five years? How are these different from your pre-injury goals?

25. Is there anything you would like to ask me?

26. Would you be happy for me to contact you with any questions that might arise when I analyse these?

What is the best way for me to contact you?

Would you prefer a printed or email copy of your transcript?

**Complete any missing demographic information**
Appendix H: Interview schedule professionals - ACC

Interview schedule: ACC

Introduction and Preparation

I am interested in the factors which influence return to work/normal daily activities for people injured in the Christchurch earthquake.

I am interested in your experiences working on return to work with the people injured in the Christchurch earthquake. Please speak as freely as you like. I may ask you to clarify or expand on something. If you feel uncomfortable at any time you may pass on a question, or stop the interview at any time. All information you provide will remain anonymous.

Sign consent form
Explain procedure
Check tape-recorder is working
Start recording

1. Can you describe your role within ACC?
2. Where does return to work fit into your role?
3. How would you define a successful RTW for one of your clients?
4. How successful has the return to work been for individuals injured in the earthquake?
5. What if any differences did you experience with the RTW process for the individuals injured in the earthquake compared to your usual client group?
   a. Working with other groups (EQC)
   b. Policies
   c. Provisions
6. Why do you think there were those differences?
7. When you think of the RTW process you have engaged with someone injured in the earthquake, are there factors that have helped the RTW process?
8. How did that help? Tell me what was about that you find so helpful
9. Can you give me some examples of things that have hindered this process?
   a. What do you mean by that?
b. How did that help? Tell me what was so helpful.

c. Anything else?

10. How did you choose a vocational provider to assist with RTW for earthquake injured?

   a. Any different to normal?

11. Who else is involved in the RTW plan?

12. If you could repeat the process again is there anything that you would do differently?

13. What was your experience of the earthquake? How did that influence your work with your clients?

14. The Christchurch ACC office was damaged; how did that change affect your work?

15. Were any changes made to ACC’s policies to accommodate for the earthquake injured group of clients?

16. How much leeway do you have to adapt the policies you work within?

17. How did ACC cope with the large number of claims?

18. How would they have coped with large numbers of seriously injured clients?

19. Is there anything else you think I should know that will help me understand the influences of the return to work for someone injured in an earthquake better?

Can I just ask you some questions about yourself?

Occupation
Number of years in this occupation
Occupation/job level
Length of time in current job
Age
Sex
Interview end time
Would you prefer a printed or email copy of your transcript?
What is the best way for me to contact you?
Would you be happy for me to contact you with any questions that might arise when I analyse further interviews?
Appendix I: Interview schedule professionals – vocational professional

Phase Interview schedule: Vocational Professional

Introduction and Preparation

As you know I am interested in the factors which influence return to work/normal daily activities for people injured in the Christchurch earthquake.

I am interested in your experiences working on return to work with the people injured in the Christchurch earthquake. Please speak as freely as you like. I may ask you to clarify or expand on something. If you feel uncomfortable at any time you may pass on a question, or stop the interview at any time. All information you provide will remain anonymous.

Sign consent form
Explain procedure
Check tape-recorder is working
Start recording

1. Can you describe your role in facilitating the return to work for someone injured in the earthquake?
2. How would you define a successful RTW for one of your clients?
3. How successful has the return to work been for individuals injured in the earthquake?
4. When you think of the RTW process you have engaged with someone injured in the earthquake, are there factors that have helped the RTW process?
5. How did that help? Tell me what was about. that you find so helpful
6. Can you give me some more examples?
7. Can you give me some examples of things that have hindered this process?
   a. What do you mean by that?
   b. How did that help? Tell me what was so helpful.
   c. Anything else?
8. Can you think what else would have been helpful that you haven’t had access to?
9. What, if any, differences did you experience with the RTW process for the individuals injured in the earthquake compared to your usual client group?

10. Why do you think there were those differences?

11. What was your experience of the earthquake? How did that influence your work with your clients?

12. Who else is involved in the RTW plan?

13. Is there anything else you think I should know that will help me understand the influences of the return to work for someone injured in an earthquake better?

Can I just ask you some questions about yourself?

Occupation
Number of years in this occupation
Occupation/job level
Length of time in current job
Age
Sex
Interview end time
Would you prefer a printed or email copy of your transcript?
What is the best way for me to contact you?
Would you be happy for me to contact you with any questions that might arise when I analyse further interviews?
### Appendix J: – Coding example

<table>
<thead>
<tr>
<th>Quotes</th>
<th>Initial codes</th>
<th>Focused codes</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Even though accidents are accidents and no one goes looking for them. I think I was doing something so ordinary, just walking down the street, you know, it wasn’t as if I was crossing the road, or in a car, or anything. I was just doing what you do, just walking down the street and suddenly, just a disaster,” Evelyn Interview 1</td>
<td>Disaster not an accident, holding onto evidence of the moment, loss of control over earthquake, second hand memory, surviving earthquake, survivors vs. victims, revisiting the scene, assigning blame</td>
<td>Experiencing the earthquake</td>
<td>The Earthquake experience</td>
</tr>
<tr>
<td>“I do feel quite angry about the whole thing, though. ‘Cos I do feel, you know, as far as my accident, and the building falling on me, it was in no way my fault. Like, I didn’t get into a car and drive drunk or I didn’t drive carelessly, even if I was sober, you know. I didn’t cross a yellow line or anything. A building fell on me, and if this non-sue law was not around, most of the earthquake victims would be able to sue Council, building owners, employers, you know. We’d all be multi-millionaires, probably if we had a different type of legislation in New Zealand.” Grace Interview 2</td>
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<td>“The vast majority of ACC staff had been in CBD during the earthquake so we had our own personal issues that we were dealing with in terms of living with no water, living with no power, having uncertainty over other family members and their welfare, so there was that heightened level of anxiety that we had as individuals.” Participant J ACC</td>
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“I don’t remember a week before the earthquake and no clear vivid memories until about five, five and a half weeks afterwards. Took ten men to lift the stuff off us. My daughter was underneath me. They pulled her out, she wasn’t breathing but they got her breathing again and she was .... One of the young guys, carried her in his arms. Somebody else held her neck. She was the first person that got to hospital. St John checked me and believed that .... I was pronounced dead at the scene. So I was covered by a builder’s blanket where I lay for over two hours. A young construction worker walked past and saw my feet were sticking out from underneath the blanket, saw my foot twitch and got a Territorial Army medic to check me who then said, “She’s not dead.” They shifted me to a park bench and I was taken by ambulance to the hospital and one of the doctors said if I’d been there another 20 minutes I wouldn’t be here today.” Alexis Interview 1

“Got in .... from the ambulance ride to the hospital and it was like crossing the finishing line of running the Coast to Coast, physically and emotionally. It was like “Oh, God, I’m over the line, somebody will take over. This will get fixed now.” Polly Interview 1

“And it just bang! There was no ... It just happened. And I grabbed hold of the bench and everything went black which probably would have been the lights went out. And I felt a sensation of falling and I didn’t know why. And what had happened was the floor had given
way and all the walls had collapsed and the roof had come in and instead of being on the first floor, I actually ended up on the ground floor with all the debris, with all the masonry and the bricks and all that lying on top of me. And I was bent over like a staple.” Samantha Interview 1

“… as soon as I jumped under my desk there was like a rumble and … Sort of when you’re in an elevator, how when you stop on a floor, it sort of drops. It sort of felt like that and then it was pitch black. And yeah, the legs were pretty sore but they went numb pretty much, not straight away, but probably half an hour to an hour, if that. But everything seemed like eternity.” Susan Interview 1

“Yep. So blame. I kind of blame the people that were supposed to be checking the building because of the significant damage that was done to one of the corners, that structure weakened the building and that’s what they say the collapse was from.” Taylor Interview 1