

**Accidental Falls  
and Psychological Trauma  
in Older People**

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## **Abstract**

Unintentional falls may pose a threat of death or injury to an older person. The psychological burden experienced by older adults after a fall adds to recovery difficulties. Persistent psychological problems post-fall may be related to posttraumatic stress disorder (PTSD). The limited research on the phenomenon suggested that some older adults develop PTSD after falling. The present research sought to gather data on post-fall trauma in older adults. The aims of this mixed methods study were to explore factors related to PTSD development and the impact of PTSD on older people's recovery and lives.

Participants in the quantitative study were 119 adults age 60 years or older admitted to one of three general hospitals in Poland. There were 11 individuals who took part in two qualitative interviews – one post-discharge and one post-recovery. PTSD symptoms were reported by 32% of patients. Older age, gender, multiple chronic conditions, injury severity, the length of time spent on the ground waiting for help and falls history were significantly correlated with PTSD symptoms. The qualitative interviews revealed that older adults' lives were heavily affected by their falls. For some participants, their falls did not impact their lives long-term, yet for several individuals there was a sense of no return to the lives they had previously lived. It affected their perception of their lives, their approach to the recovery, and the strategies they applied in order to cope with their fall-related injuries.

Results may have implications for understanding the psychological burden of falls. This study can be seen as a first step in patient characterisation, and predicts who may benefit from PTSD intervention. Further investigations are needed to assess the proposed factors related to post-fall PTSD, as well as new fall interventions which would target fall patients who are at risk of PTSD development ought to be introduced.

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## List of abbreviations

CFI	Comparative Fit Index
DSM	Diagnostic and Statistical Manual of Mental Disorders
ED	Emergency Department
EU	European Union
FE	Falls-efficacy
FES-I	Short Falls Efficacy Scale – International version
FoF	Fear of falls
PDS	The posttraumatic stress disorder scale
PCL-S	Posttraumatic Stress Disorder Checklist—Specific
PSS	The Post-Traumatic Stress Symptom Scale
PTSD	Posttraumatic Stress Disorder
PVC	Peripheral venous catheter
RMSEA	Root mean square error of approximation
SOC	Selection, Optimisation, Compensation
TLI	Tucker-Lewis Index
UK	United Kingdom
WWII	the Second World War

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## **Author's declaration**

The author has nothing to declare in regards to this thesis.



## **Dedication**

To my family, for their unwavering support... over time and across the distance.

# **1. Introduction**

This research aims to explore the problem of post-fall trauma in older adults. This chapter provides an introduction to the thesis, and it is divided into five sections. In the first section, I provide my own perspective, in which I aim to introduce myself to the reader, provide my own background, and my motivation for the research. The second section of the chapter focuses on the significance of the problem of falls in older adults. The next section discusses an approach to the research. It briefly describes theories chosen for the research in order to achieve the study aims, which are presented in the next section. The last section provides an outline of the thesis and briefly describes each chapter.

## **1.1. My perspective**

I am from Poland where I spent first 18 years of my life. During that time, I witnessed several aversive events, just as any other Pole. When I was a child, major political, social and economic changes took place, which severely affected everyone in Poland. Such drastic changes made much impact on the citizens. The hyperinflation caused much poverty, which also affected my own family. The next important occurrence that affected every citizen in Poland was the Great Polish Flood in 1997, which happened at the time when people still struggled with, or just overcame, the consequences of the post-Soviet transformation. Many people enjoyed their times of peace, when in one day all of their belongings were destroyed by the flood. It was the time of living with fear of suddenly losing everything, including own life, and when the flood finally arrived, there was a sense of relief that it finally happened, which was paradoxical. It was not the only flood I have witnessed, yet it was the first and the most severe I can remember.

Growing up in the Greater Poland region, where all Poles were planned to be exterminated during the WWII, made much impact on people living there. I often encounter the common view that the war finished and we, Poles, should not dwell on it. It is however difficult, when various reminders of the war are still present in Poland. There are obvious reminders, such as museums and monuments, and less obvious reminders, such as the WWII bombs often found in forests, bullets in walls, or my own high school which used to be a part of the Kalisz ghetto. The war-related trauma still echoes in the country. Most importantly, I have met many people who survived that time, including my own relatives. They often did not want to talk about their experiences, and I did not understand why they were reluctant to talk about something so important.

My background is in psychology, but I am also Polish, and I struggle to find studies on trauma among Poles, which is surprising given the number of potentially traumatic events that have happened in Poland. The scant research available, show that one in three older adults in Poland meet diagnostic criteria for PTSD (Lis-Turlejska et al., 2018). Moreover, even young adults in Poland

struggle with PTSD. One in five of university-level students show PTSD symptoms (Dragan et al., 2012). This may potentially indicate that trauma may be passed from one generation to another (Schier, 2018). It also makes Poland an interesting area for the research.

Trauma is not the only neglected area in Poland. Accidental falls in older adults are another problem that requires more attention in Poland. Thus, merging the two aspects became an interesting challenge for me. Falls can be both trivial and traumatic, thus an individual's own interpretation of the event may influence their approaches to their recovery. It inspired me to pursue a PhD to understand the rigors of academic research and the benefits it can bring to the area. In particular, I was interested in providing the evidence of post-fall PTSD, since older adults are not considered an age group where traumatic stress can occur.

## **1.2. Significance of the problem**

Changing demographic patterns have resulted in an ageing European population, which presents many challenges, most notably economic, political and social aspects related to the population structure (Grant et al., 2004). Maintaining the health of communities and individuals becomes a significant factor in dealing with an ageing population. Prevention of unintentional injury, and the healthcare costs associated with treating such injuries are an important topic to address. Falls present a major threat to the health of older people. The number of falls is expected to increase and consequently become one of the major public health problems, which will cause an escalating burden on older adults, society but also the healthcare providers. Falls can result in negative consequences for functioning and psychosocial wellbeing. There are numerous psychological factors commonly associated with falling, such as fear of falls (FoF), falls-related self-efficacy (FE), and anxiety. FoF may be innate and adaptive, while anxiety is always maladaptive, which in some cases may take the form of an anxiety disorder. The common feature of anxiety disorders is the excessiveness of fear and anxiety (APA, 2013). In fact, excessive fear and anxiety are central constructs in posttraumatic stress disorder (PTSD; Lissek et al., 2005). It can be speculated that some fallers may experience PTSD, since PTSD involves fear (Simms et al., 2002; Zoellner et al., 2011). PTSD is a result of a trauma exposure (APA, 2013), therefore there may be a possibility to define falls as trauma.

PTSD may have detrimental effects on older adults. Physical health conditions tend to become more common in later life since age is one of the strongest risk factors for chronic diseases (Kirkland, 2013). PTSD in later life has been associated with an increased risk of health conditions, such as multiple psychiatric comorbidities, including anxiety and depression (Spitzer et al., 2008), diabetes and osteoarthritis (Kuwert et al., 2013), gastrointestinal conditions and arthritis (Pietrzak et al., 2011). PTSD is an independent factor for coronary heart disease (Edmondson et al., 2013), while

heart disease is a significant risk factor for falling (Ek et al., 2019). Traumatized older adults report impairments in daily functioning, less satisfaction with life and the quality of their care (van Zelst et al., 2006). Decreased vigilance lack of attention, irritability and sleep problems may increase the risk for future injuries (Patten et al., 2010). Thus, PTSD in old age is an important topic to address, especially that falls, which are very common among older adults, may trigger traumatic stress.

The research on post-fall PTSD is rather scant, since only five previous studies were detected in the literature review. The results of previous studies suggest that PTSD after falling is not uncommon, yet there is very limited agreement between them on factors related to PTSD development. Furthermore, none of the studies explored the meaning of PTSD in older adults' recovery and life. That is, even if PTSD is reported only by some fallers, the severity of fall-related consequences may be overwhelming and can preclude fall rehabilitation. Moreover, the phenomenon of post-fall PTSD can be particularly problematic for people who might have been traumatized previously, especially that the accumulation of aversive events may relate to greater susceptibility to PTSD (Solomon & Ginzburg, 1998). A country where numerous potentially traumatic events have happened is Poland, which is called "a country of traumatized people" (Schier, 2018). In fact, 38.3% of people aged 71-97 report PTSD (Lis-Turlejska et al., 2018). That is, the rates of PTSD among older people in Poland are more similar to the rates of PTSD among military population - 35.8% (Friedman, et al., 1994), than the rates of PTSD among older adults in e.g. Germany - 3.4% (Glaesmer et al., 2010).

Another important reason for conducting the research in Poland relates to high fall-related mortality rates reported in Poland. Poland has higher rates of fall-related deaths (7.6 per 100 000 inhabitants) than the European Union (5.3 per 100 000 inhabitants; Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny, 2018). Moreover, the highest fall-related death rate in Poland has been reported in the Greater Poland Voivodeship (12.4 per 100 000 inhabitants), where falls pose a greater risk for life than traffic accidents (Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny, 2018). There is no apparent reason for such high fall-related mortality rates (Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny, 2018). One of the speculated explanations for such high mortality rates could be related to the historical context of the region, and presumably high traumatic stress rates. However, it is impossible to make any clear conclusions, since no research and data are available on the issue.

### **1.3. Approach to the research**

Given that previous negative events might potentially influence older adults' experience of injurious falls, a narrative approach was undertaken to the research. According to Heidegger (1962), existence occurs through the past, present and future. The understanding is in the past, the self is in the present by dealing with daily life, and it is in the future by projecting oneself onto its future possibilities

(Zimmerman, 1981). Ellis-Hill and colleagues (2008) developed the Life Thread Model, which recognises that the life story constitutes of many life threads or stories. The thread represents one's life with past memories at one end, and one's future plans at the other end of the thread. They help to create a past and future life, generating a sense of one's identity, situation and future possibilities. Life-changing events, such as a severe injury, can disturb the thread, and therefore distract the sense of continuity between past and future, where future is no longer predictable. In the presence of injury, some threads are discontinued and need to be tied off. However, it is important to find ways to reconnect these threads, and consequently increase the patient's positive sense of self. A model which frames strategies applied by individuals in order to cope with their challenges is Selection, Optimisation and Compensation (SOC, Baltes & Baltes, 1990). This is a theory of adapting to the constraints and losses of later life by optimising favourable outcomes for the self (Coleman & O'Hanlon, 2017). SOC is constructed around two concepts. The first one is goal choice which is selection. The second concepts relates to the means for achieving goals which is represented by optimisation and compensation strategies (Baltes & Baltes, 1990).

The SOC model is considered over others since it has been shown to address improvement, maintenance and reorientation in terms of coping with major life changes (Boerner & Jopp, 2007). It is a broad theory which can be applied to explain a diverse range of conditions where adaptive processes are needed to address physiological and psychological deficits. Up to date, only Laybourne et al. (2008) applied the SOC model to the area of falls, yet the authors failed to grasp the essence of the model. That is, they categorised older adults according to the strategies they utilised. This is however problematic, since Paul Baltes emphasised the need for adoption of a holistic view on SOC (Freund, 2008).

#### **1.4. Aims of the research**

After conducting the initial literature review, it became evident that little was known about factors associated post-fall PTSD. Thus, it became apparent that the rich data had to be collected to capture the meaning of falls in older people's lives. A mixed methods design was chosen for this research. There are two aims of the research:

- To explore factors associated with PTSD.
- To explore the impact of falls on older adults' recovery and lives.

In this study, the initial quantitative approach examined whether certain pre-determined factors, based on the literature review, related to post-fall PTSD. It also explored how the presence of trauma symptoms related to fall-related self-efficacy; and whether it related to the changes in self-concept and the SOC competency. This was then followed by a qualitative component that explored what

other aspects may relate to post-fall PTSD. Importantly, it aimed to explore how fall-related trauma might affect older people's recovery and lives. Each participant was planned to be interviewed twice – after hospital discharge and minimum 6 months later, when their physical recovery was most likely to be ended.

## **1.5. Outline of the thesis**

The present thesis includes seven chapters:

- Chapter 1: Introduction

This chapter introduces the thesis and provides a context for the research – personal perspective and general background introduction for the topic. The aim of the chapter is to highlight the importance of the falls in older adults. It also discusses an approach chosen to the research. It concludes with the aims of the research and the methods selected in order to achieve the aims.

- Chapter 2: Falls in older people

This chapter provides a literature review of the problem of falls in older adults. It can be broadly divided into four sections: the prevalence and consequences of falls, fall risk factors, psychological factors related to falls, and previous research on post-fall PTSD.

- Chapter 3: Theoretical perspectives

Chapter 3 discusses definitions of PTSD and theoretical models of PTSD. It presents the problem of PTSD in Poland, and suggests that the timing of the trauma event may impact the way PTSD is experienced. The chapter then moves on to discuss the narrative approach to the thesis. It introduces the Life Thread Model (Ellis-Hill et al., 2008), and the Selection, Optimisation and Compensation model (Baltes & Baltes, 1990), which were applied in the research in order to explore older adults' experiences of falls.

- Chapter 4: Methodology

This chapter presents mixed methods as an approach chosen for this study. Pragmatism was chosen as a way of merging the two approaches and therefore discussed. The chapter then moves on to describing the quantitative phase of the study. The settings, recruitment, instruments and the analytic strategy are presented. The section on the qualitative study starts with a description of narrative approaches and the reasons for choosing narrative inquiry for this study. The recruitment, settings and an approach to the analysis are discussed. The chapter concludes with ethical considerations

- Chapter 5: Quantitative findings

Chapter 5 discusses the quantitative data. It was found that 32% of 119 participants developed PTSD symptomology. PTSD severity was related to older age, female gender, number of health problems and falls history. Individuals with hip fractures, head trauma and back injury reported higher levels of PTSD. Furthermore, the length of time waiting for help was associated with PTSD severity. Traumatized individuals perceived their future self more negatively than their past self and they utilized significantly fewer coping strategies than non-traumatized participants. Path analyses were conducted to examine the associations between falls-efficacy and other fall-related constructs. The results are discussed.

#### Chapter 6: Qualitative findings

This chapter presents the qualitative data collected from 11 participants. It was found that after falling, older adults entered a new reality, where their bodies and minds were affected by their injuries. Several older adults perceived their falls as any other accident in life. Their falls affected their lives only for a short time. For some individuals there was a sense that their lives had permanently changed, and there was no return to the lives they had previously lived. Furthermore, they experienced various negative events before falling. Thus, continuing their lives meant continuing emotional and often physical pain. The chapter concludes with a discussion on the findings.

#### Chapter 7: General discussion

Chapter 7 summarised and discusses the key findings of the quantitative and qualitative studies. This research successfully achieved its original aims and provided supportive evidence that post-fall trauma is an important issue in some older adults. These findings are paramount in providing a new research contribution to support and inform future research and health specialists and practitioners. More appropriate interventions need to be developed which would address fall-related trauma in older adults. Several areas for future work are identified. The reflexive account, strengths, challenges and limitations of the research are discussed.

## **2. Falls in older people**

### **2.1. Introduction**

In this chapter, I provide a review of literature to explore the state of current knowledge of falls among older adults. The chapter begins with an overview of the definition of falls, falls prevalence and the consequences of falls for an older person, as well as the healthcare system. Given the fact that the pace of population ageing around the world is increasing, falls will continue to pose a great problem to the society. Next, several fall risk factors are identified, organised into two categories – extrinsic and intrinsic risk factors. They are described in the context of prevalence of each risk factor to highlight the severity of the problem. However, older adults' fall risk may not necessarily correspond to what people actually do. Thus, the chapter shifts its focus on psychological factors related to falling, namely, fear of falls, falls-efficacy and anxiety. Since the terms are often used interchangeably, much confusion exists in the field, therefore the distinction between the constructs is discussed. One of the severe consequences of falling is posttraumatic stress disorder which has been found to be present among some older adults. Previous studies on post-fall trauma are presented and their main findings compared.

#### **2.1.1. Falls**

Falls are common events in daily life. However, falls in the elderly are a significant problem and are considered a giant of geriatrics (Morley, 2017). They present a substantial threat to older people's health and wellbeing since falls are a major contributor to morbidity, disability and premature death (Tinetti & Kumar, 2010). Everyone intuitively knows what a fall is, yet it has a different definition for different people. That is, for older people it relates to “loss of balance” but for healthcare providers falls are defined in terms of the consequences of falling (Zecevic et al., 2006). Moreover, older people may not hear this word until they interface with the health system after they experience a fall (Kenny et al., 2010). The definition applied throughout the thesis is the definition proposed by the Prevention of Falls Network Europe (Lamb et al., 2005) according to which a fall is an unexpected event in which the participant comes to rest on the ground, floor or lower level.

#### **2.1.2. Prevalence**

Falls are extremely frequent among older people (Yoshida, 2007). The English Longitudinal Study of Ageing (Gale et al., 2016) found that 28% of over 4300 respondents aged 60+ reported at least one fall in the previous two years. In the community, it is estimated that 28-35% of those aged 65+ encounter at least one fall every year and the number increases to up to 42% for those aged 75+ (Kenny et al., 2013). In Poland, 23% of people 65+ report falling (Urząd Marszałkowski Województwa Kujawsko-Pomorskiego, 2018). In England, from 2017 to 2018, there were over 200



000 fall-related emergency hospital admissions among those aged 65+, with nearly 147 000 (66.6%) of these individuals aged 80+ (Public Health England, 2020), which implies that the problem of falling becomes more severe with age.

### **2.1.3. Injuries**

Around 40-60% of falls result in injuries (Kenny et al., 2013). In England, falls were the leading cause of injury in 2013 (Public Health England, 2020). In the European Union, falls are the predominant cause (58%) of injury-related emergency department attendance for older people (Turner et al., 2015). Every year in the European Union, over 2.3 million injured fallers attend emergency departments, and 1.4 million injured fallers are admitted to hospital (Turner et al., 2015). Fractures constitute half of fall-related injuries that require emergency department attendance (Turner et al., 2015). Other injuries involve bruises (1 in 10 injuries), wounds (1 in 20 injuries) and brain injury, or concussion (1 in 20 injuries; Turner et al., 2015). Around 1/3 fallers experience upper extremities injuries, 1/3 report injuries to the lower extremities and 1/5 experienced head injury and 1/10 report injuries to other parts of the body (Turner et al., 2015).

The number of fall-related injuries experienced increases with age. People aged 85 and older report three times more injuries than people aged 65-74 (Turner et al., 2015). Furthermore, the severity of fall-related injuries also increases with age. Around 32% of people aged 65-74 require hospital admission, whereas the numbers increase to 39% for those aged 75-84 and 45% for individuals aged 85+ (Turner et al., 2015). Moreover, women experience twice as many fall-related injuries that require emergency department attendance and hospital admissions (Turner et al., 2015).

### **2.1.4. Disability**

Falls were the ninth highest cause of disability-adjusted life years in England in 2013 (Public Health England, 2020). Falls outranked conditions such as Alzheimer's disease, dementia and asthma in the Global Burden of Diseases, Injuries and Risk Factors Study 2017 (James et al., 2020). In particular, hip fractures, which are mainly caused by falls (Parkkari et al., 1999), may have severe consequences for older adults. Hip fractures not only relate to an increased one-year mortality of between 18-33%, but also one in five hip fracture patients enters long-term care in the first year after fracture (Public Health England, 2020).

### **2.1.5. Mortality**

Deaths from unintentional injuries are the seventh leading cause of death among older adults and falls account for the largest percentage of those deaths (National Center for Health Statistics, 2017). Approximately 36 000 older people die as a consequence of falling every year in the European Union (Turner et al., 2015). Almost 90% from those people are individuals aged 75 or older and nearly

60% of them are women (Turner et al., 2015). Fall-related mortality appears to be a big problem in Poland where falls pose a greater risk for life than traffic accidents (Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny, 2018). In 2010 Poland had higher rates of fall-related deaths (7.6 per 100 000 inhabitants) compared to European Union countries where the number was considerably lower (5.3 per 100 000 inhabitants; Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny, 2018). Furthermore, the number of fall-related deaths have been increasing in the past years, for instance, the rate of fall-related deaths in the United States increased 31% from 2007 – 2016, with an average increase of 3% per year (Burns & Kakara, 2018).

#### **2.1.6. Cost of falls**

Falls have a considerable impact on healthcare costs. The healthcare expenditure for treating fall-related injuries is as high as 25 billion Euro every year in the European Union (Turner et al., 2015). In the UK, the total annual cost of fragility fractures has been estimated at nearly £4.4 billion, including hip fracture treatment which is responsible for nearly half of that cost (Public Health England, 2020). The Department of Health estimates that if every strategic health authority invested £2m in falls early intervention services, they could each save £5m each year through reduced NHS costs (Age UK, 2012).

#### **2.1.7. Ageing population, increasing numbers**

Given the current burden of falls, it is important to understand how that burden will grow as the population continues to age. The population is ageing globally and 1 in 11 people in the world was 65+ in 2019 and it is projected that by 2050 1 in 6 people will be over the age of 65 (UN DESA's Population Division, 2019). The population of people over 65 in the EU is estimated to grow by 60% by 2050 (Turner et al., 2015). One of the most critical cases of ageing populations is Poland. Poland currently has Europe's eight largest population of 38.4 million, but the population is projected to decrease to 32 million by 2050 (Statistics Poland, 2018). In 2017, people aged 65+ constituted 20% of the population in Poland (Stanczak & Znajewska, 2017), while in 2010 the number was as low as 13% (World Bank, 2019). It is expected that people aged over 60 years old will constitute 40% of the population in Poland by 2050 (Portal Samorządowy, 2018).

Moreover, the number of falls is also expected to increase and consequently become one of the major public health problems. That will cause an escalating burden on older adults, society but also the healthcare providers. That is, the fall-related emergency department attendance is expected to increase from 3.8 million to 6 million a year by 2050 and 2.3 million of those will require subsequent long term care (Turner et al., 2015). Furthermore, the cost of treatment of fall-related injuries is also expected to increase. For instance, the cost of hip fracture treatment in the UK is expected to rise by 32% by 2025 (Leal et al., 2016).

## 2.2. Fall risk factors

In order to understand why falls are so common among older adults, it is important to understand risk factors for falling. A risk factor is defined as a characteristic that is found significantly more often in people who subsequently experience an adverse event than in people who do not experience such an event (Rubenstein & Josephson, 2006). That is, any characteristic of an individual, their environment, or a situation, that increases the likelihood that an individual will experience a fall. Most falls are multifactorial in nature and are the result of extrinsic and intrinsic factors. Figure 1 presents intrinsic and extrinsic factors recognised by the WHO (Skelton & Todd, 2004).

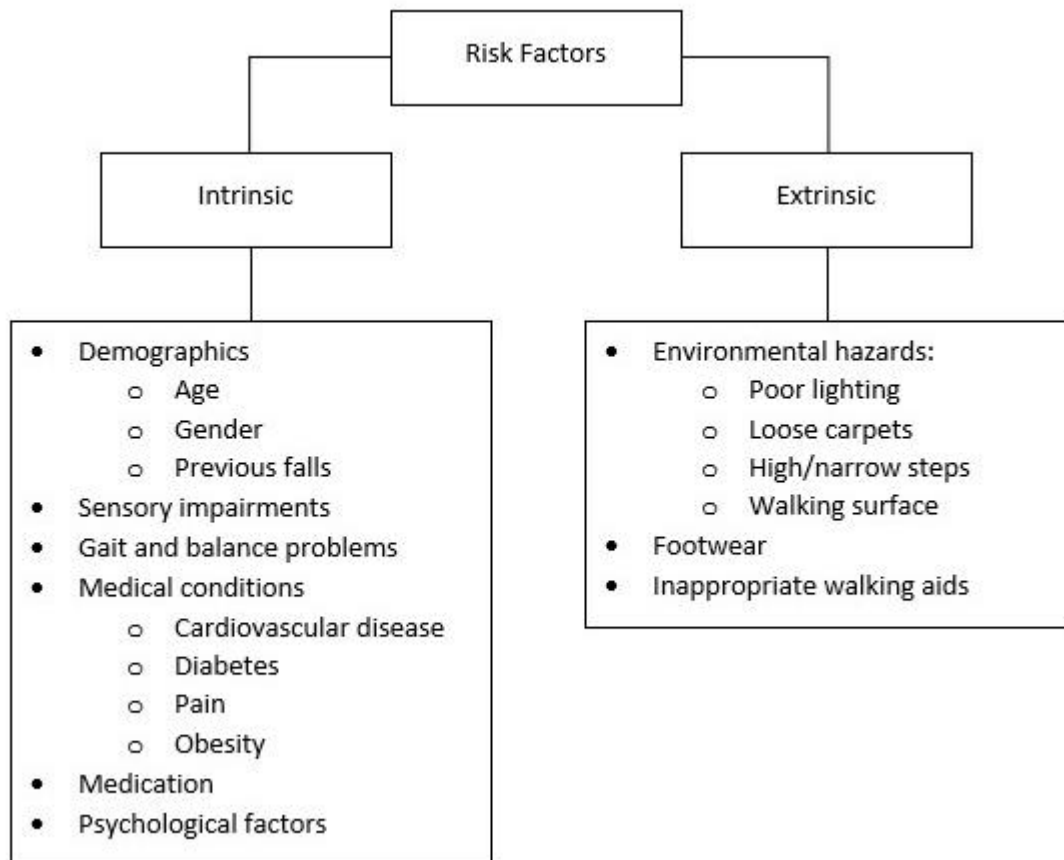


Figure 1. Intrinsic and extrinsic risk factors for falling.

### 2.2.1. Extrinsic factors

Extrinsic factors include factors such as footwear, using walking aids and environmental hazards (Skelton & Todd, 2004). Environmental hazards include factors such as poor lighting, loose carpets, high or narrow steps and walking surface (Cumming & Klineberg, 1994).

### **2.2.1.1. Walking aids**

Approximately one in four adults aged over 65 report mobility device use (Gell et al., 2015). Presumably, using assistive devices should protect older adults from falling. However, using walking aids is a strong predictor for falling (Deandrea et al., 2010). Using walking aids may increase attentional demands and compensatory grasping inhibition (Bateni et al., 2004). Furthermore, the need to use walking aids may indicate worse general health condition including problems that may be fall risk factors themselves (De Mettelinge & Cambier, 2015). In fact, walking aids are more commonly used by frequent fallers and those who show significantly different gait patterns (De Mettelinge & Cambier, 2015).

### **2.2.1.2. Footwear**

A type of footwear older adults choose is also very important. Slippers increase the risk of falling comparing to walking barefoot or with fastened shoes (Menant et al., 2008). Moreover, walking barefoot or with socks can increase the fall risk by up to 11 times compared to walking with athletic shoes (Menant et al., 2008). On the other hand, using anti-slip shoe devices substantially reduce outside falls during winter (Inouye et al., 2009).

### **2.2.1.3. Home environment**

Home hazards are considered a significant risk factor. They are also very common and include hazards such as slippery floors, unstable furniture, loose rugs, inadequate lighting and obstructed walkways (Carter et al., 1997). Furthermore, the type of housing also contributes to that risk. That is, individuals living in low-quality accommodation are more likely to fall (de Almeida et al., 2012). Reducing home hazards by itself is usually not sufficient to reduce the fall risk (Panel on Prevention of Falls in Older Persons, 2011). Tiefenbachová & Zeleníková (2019) demonstrated that assessment of home hazards followed by individual education and home environment modification can significantly reduce the risk of falling at home.

## **2.2.2. Intrinsic factors**

Intrinsic factors relate to the characteristics of the person. They include demographics characteristics, sensory impairments, gait and balance problems, medical disorders, prescribed medication and psychological factors. Psychological factors play an important role in fall risk. There are a number of psychological factors that are commonly associated with the risk of falling such as fear of falling, falls efficacy, depression and anxiety. The constructs are also considered the outcomes of falling (Denkinger et al., 2015; Lavedán et al., 2018). They will be discussed in depth later in the chapter.

### **2.2.2.1. Demographics**

Age is considered one of the key risk factors for falls (WHO, 2018) due to both physiologic and pathologic changes (Ambrose et al., 2013). Furthermore, history of previous falls is a risk factor for falls itself (Al-Aama, 2011). Especially older women are more prone to falling and increased injury severity (WHO, 2018). Women have more risk factors for falling than men (Arkkukangas et al., 2020). The 10-years long Swedish National Study on Aging and Care (Ek et al., 2019) found that women and men showed different fall risk profiles. For instance, women who lived alone and women who needed help with at least one activity of daily living showed higher fall risks, which was not the case for men.

### **2.2.2.2. Medical conditions**

As people age, their health condition tends to decline. Percentage of people in the European Union who self-report their health as good, decreases with age from around 40% of those aged 65-74 to approximately 25% of people aged 85+ (Harbers & Achterberg, 2012). Conversely, percentage of those who report a chronic illness increases with age from 55% of those aged 65-74 to 70% of those aged 85+. Strikingly, poor self-perceived health is associated with increased fall risk (de Almeida et al., 2012).

Several diseases have been reported to be independent predictors for falls such as chronic pulmonary disease and diabetes (Samson et al., 2018) which are common health problems among the elderly. In the European Union, chronic pulmonary disease prevalence among men increases with age from 6% of those aged 65-74, up to 14% those aged 85+ (Harbers & Achterberg, 2012). Heart disease is also a significant risk factor for falling among men in the long period (Ek et al., 2019).

### **2.2.2.3. Pain**

Pain is a strong independent risk factor for falls (Munch et al., 2015; Stubbs et al., 2014) and is commonly experienced by older adults. Approximately 38% of people aged over 65 report chronic pain (Larsson et al., 2017). Welmer et al. (2017) found that men with at least mild pain, daily pain and men who had several activities of daily living affected by pain, had a significantly increased likelihood of injurious falls at 3-year and 10-year follow-up periods. Furthermore, the risk increases with the severity of pain (Stubbs et al., 2014).

### **2.2.2.4. Obesity**

Obesity is currently considered one of the biggest public health challenges. It is defined as a body mass index (BMI) of 30 and over. In the EU, 22% of those aged 65-74 and 17% of those aged 75+ are obese (EUROSTAT, 2016). Overweight older adults tend to fall more (Fjeldstad et al., 2008; Himes & Reynolds, 2012). Obesity increases fall risk by 31% (Mitchell et al., 2014). However,

characteristics of obesity, other than the BMI, may better explain fall risk since BMI may not be representative of muscle quality in older age (Clemson et al., 2015). For instance, Cho et al. (2018) found that fall risk was not associated with BMI but with central obesity. The authors suggested that apple-shaped body types have a higher center of gravity than individuals without central obesity. It may also translate to more pronounced lordosis which further affects the center of gravity that is related to poor posture stability (Hamilton et al., 2008). Hence, rather than the obesity *per se*, factors related to it is such as body and spine shapes may be more associated with fall risks.

#### **2.2.2.5. Impaired mobility and gait**

Being able to walk independently is an important contributor to functional independence among older adults (De Mettelinge & Cambier, 2015). Ageing relates to many changes in gait such as a decrease in gait velocity and step length, and a decrease in lower limb strength (Al-Aama, 2011). Approximately one in three of people aged over 60 show impaired gait (Mahlknecht et al., 2013). Older adults may struggle with shifting or taking rapid steps in order to avoid falling when their balance is impaired (Ambrose et al., 2013). The Baltimore Longitudinal Study of Aging found that older age was related to slower walking speed (uk Ko et al., 2009). It is particularly problematic given the research by Verghese et al. (2009) who reported that each 10 cm/s decrease in gait speed was associated with a 7% increased risk for falls.

#### **2.2.2.6. Sensory impairments**

The ability to visually detect surroundings is needed for posture control (Salonen & Kivelä, 2012). Vision impairments are strong risk factors for falling (Basaran et al., 2016; Salonen & Kivelä, 2012). They are most common among older adults; with cataract and uncorrected refractive error contributing to 77% of vision impairments among people aged 50+ (Flaxman et al., 2017). Palagyi et al. (2016) reported a substantial rate of falls among older adults with cataract and the activity level reported by cataract patients was a significant fall risk factor.

Hearing loss, although not as extensively researched as visual impairments, has also been associated with an increased fall risk. In the systematic review and meta-analysis of 13 studies, it was found that hearing impairment was associated with a 2.39 greater odds of falling (Jiam et al., 2016). Moreover, hearing aids do not decrease the risk for falling (Kamil et al., 2016). Potentially, there may be concomitant dysfunction of both the cochlear and vestibular sense organs given their shared location within the bony labyrinth of the inner ear, suggesting the complexity of that fall risk factor (F. R. Lin & Ferrucci, 2012).

### **2.2.2.7. Medications**

The use of certain drugs, due to their side effects (e.g. dizziness, sedation, altered balance, gait and cognition) may affect fall risk (Cumming et al., 2008). Psychotropic medications such as antidepressants and antipsychotics have a greater likelihood of causing falls compared to other drugs (Basaran et al., 2016; Ribeiro & Santos, 2015). They increase fall risk by nearly 50% (Woolcott et al., 2009). Cardiac medication has also been related to increased fall risk (Leipzig et al., 1999b). The highest fall risk related to cardiac medication relates to any changes in the medication since there is an increased fall risk the day following the change (Kelly et al., 2003). Ziere et al. (2006) pointed out that multiple medications significantly increase fall risk when at least one of the drugs is associated with an increased fall risk. Furthermore, the interaction between the drugs may further increase the fall risk and prescription of multiple medication has been associated with increased fall risks (Fjeldstad et al., 2008).

### **2.3. Falls location and physiological fall risk**

It is commonly assumed that more healthy and active older adults tend to fall outdoors, while older and frailer individuals tend to fall indoors. In fact, that claim has found much support (Bergland et al., 2003; Boyé et al., 2014; Kelsey et al., 2010). However, the indoor-outdoor dichotomy appears to be more complex, since even supposedly frailer individuals who limit their activities to minimum (Kelsey et al., 2010) still experience falls. For instance, Leavy et al. (2015) conducted a mixed-methods study investigating the context of falls among hip fractures patients. Participants who fell indoors were not a homogenous group. Those who fell during positional change indoors had the poorest functional status among other indoor fallers. They showed poor balance, history of falls, low physical activity and limitations in mobility. Participants who fell indoors due to environmental nature had higher levels of physical functioning and fewer mobility limitations, yet still an equally high prevalence of comorbidities, drug use and previous falls. Similarly, the group of outdoors fallers showed some heterogeneity. That is, older adults who fell outside in snow-free environment, rather than being similar to others within the group, were more similar to those who fell indoors. The findings suggest that not all older people falling outdoors can be considered vigorous and therefore those who fell in less challenging conditions may not be frailer. Thus, physiological status of older adults may not necessarily correspond to what people actually do, since frailer individuals also fell outdoors, hence other factors need to be considered.

### **2.4. Physiological and perceived fall risks discrepancy**

It would be plausible to assume that individuals with a higher level of fall risk are aware of it and are unlikely to engage in potentially fall-provoking activities. However, that may not always be the case and some people may judge their fall risk inaccurately. Delbaere et al. (2010a) attempted to

explore the problem by creating a model using classification and regression tree analysis in which physiological and perceived fall risks were considered. Physiological functioning assessment involved factors such as proprioception, visual contrast sensitivity, quadriceps strength, reaction time and postural sway, medical assessment involved self-reporting of health problems, medications taken, disability, quality of life and physical activity. That is, fall risk factors similar to the intrinsic factors recognised by the WHO (Skelton & Todd, 2004).

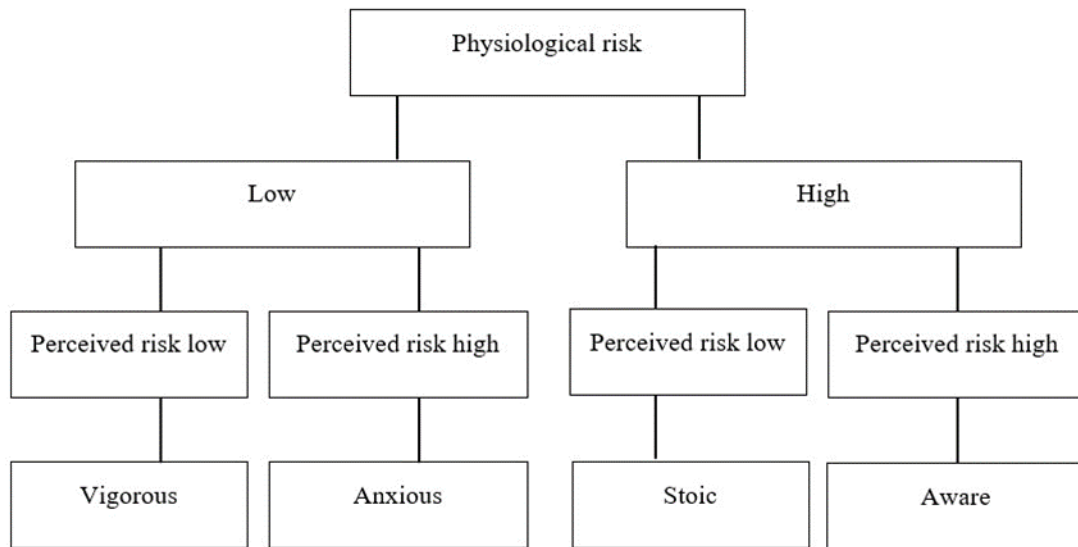


Figure 2. Classification of people based on physiological and perceived fall risk (Delbaere et al., 2010a).

Figure 2 presents the results of the analysis conducted by Delbaere et al. (2010a). The majority of individuals had an accurate perception of their fall risk. People who had both low perceived and low physiological fall risk were categorized as “vigorous” (29% of the sample); and people who were at the elevated risk on both measures were categorized as “aware” (40% of the sample). However, one in three individuals held an inaccurate view on their fall risk.

Those who showed low physiological falls risk but their perceived risk was high, were classified as “anxious” (11% of the sample). “Anxious” individuals tended to self-report higher levels of disability, symptoms of depression, lower quality of life and scored poorly on executive functioning test. However, they showed same levels of planned exercise as the “vigorous” group, but they also reported more falls than the “vigorous” group. On the other hand, those with high physiological risk but low perceived risk we described as “stoic” (20% of the sample). “Stoic” individuals were younger, with lower levels of disability, neuroticism and depression symptoms, higher levels of quality of life and were also stronger. They also did more planned exercise.



The discrepancy between physiological and perceived fall risk among 1/3 of older adults may strongly relate to psychological factors. For instance, “anxious” individuals self-reported high fall risk, despite low physiological risk. They also showed higher levels of neuroticism and their irrational fears may cause them misinterpretation of small balance impairment as more severe and it consequently may lead them to falling. In fact, “anxious” group reported similar percentage of falls as the “aware” group.

On the contrary, “stoics” who had low perceived fall risk, yet high physiological risk, reported less falls than the “aware” group that reported high both physiological and perceived risk. It was an unexpected finding since the authors hypothesised that an inaccurately low perception of fall risk would lead to a higher rate of falls (Delbaere et al., 2010a). In fact, “stoics” showed a positive attitude to life, low reactivity to stress and emotional stability. Thus, rather than undertaking risky activities, their psychological profile was protecting them from falling.

The study is of much value since it shows that physiological fall risk may not necessarily explain the number of falls experienced by older adults. It suggests that psychological factors play a crucial role in fall risk and highlights the importance of targeting them in order to decrease the prevalence of falls and consequently improve older people’s lives. The next section of the chapter will therefore discuss psychological factors related to falling.

## **2.5. Psychological factors related to falling**

Feeling safe while walking is one of the key aspects of mobility and independence among older adults. Apart from physical injury, psychological consequences of falling can be as debilitating psychologically as falling itself, leading to restrictions in activities and often to a loss of autonomy. In the following section several constructs relevant to falling will be discussed, such as fear of falling (FoF), falls-efficacy (FE) and anxiety. The concepts have been widely researched and considered both risk factors and outcomes of falling (Denkinger et al., 2015; Lavedán et al., 2018).

### **2.5.1. Fear of falls**

In 1982 Murphy and Isaacs published their classic article on “post-fall syndrome”. The authors recognised that some people experience a great FoF and severe walking difficulties after falling. Subsequently, a significant amount of research has investigated the struggles older adults encounter after falling. FoF has been recognised as a fundamental health problem among older adults and it has been one of the most widely investigated psychological factors related to falling (Jørstad et al., 2005). Despite considerable amount of literature devoted to FoF, there is no one agreed definition of FoF. Scheffer et al. (2008) pointed out that various researchers hold different definitions of FoF. In fact, in their article, Murphy and Isaacs (1982) recognised that people after a fall develop severe

*anxiety* that affected their walking abilities. Recently, Oh et al. (2019) defined FoF in terms of a high level of anxiety regarding falling while standing or walking. Some definitions of FoF focus purely on fear (Arfken et al., 1994), while the others focus on activity avoidance which results from the fear (Howland et al., 1998). Other authors focus on people's loss of confidence in their balance abilities (Maki et al., 1991). Others classify FoF as phobia associated with excessive avoidance behaviour (Chand et al., 2014).

The confusion over the definition of FoF affects the choice of assessment tools applied in the research and that influences the interpretation of the results. Studies reporting prevalence of FoF are one example of that. It has been reported that 21-87% of older people experience FoF (Arfken et al., 1994; Gaxatte et al., 2011; Scheffer et al., 2008; Simsek et al., 2019; Zijlstra et al., 2007). For instance, in some studies FoF is assessed by asking participants whether they are afraid of falling, providing yes or no answer (Simsek et al., 2019; Zijlstra et al., 2007). Such studies can show FoF rates as high as 87% (Simsek et al., 2019). This method lacks sensitivity and it does not assess the magnitude of fear. Furthermore, it leaves the interpretation of what FoF is to older adults. Yardley & Smith (2002) criticised this method as being unable to distinguish between perceived risk of falling and fear of consequences of falling. Another way of assessing FoF is to measure it with falls-efficacy scales. There is a vast amount of evidence about psychometric qualities of falls-efficacy measures showing their reliability (Scheffer et al., 2008) but the question arises whether they assess FoF at all.

The lack of consensus on its definition and operationalisation leads to misinterpretation of findings. For instance, Young and Williams (2015) proposed an explanation for how FoF can influence balance performance. Interestingly, in a diagram, Young & Williams (2015, p.9) did not use the term "fear" but used "anxiety" instead. Delbaere et al. (2010b) reported that a high level of FoF was associated with future falls independently of the presence of physical fall risks. Low levels of FoF protected against further falls through maintained physical activity and success in completing daily activities. However, FoF was assessed with a falls-efficacy scale, therefore it is FE that is thought to affect future falls rather than FoF. A randomized controlled trial tested an intervention's effectiveness for reducing FoF (Kapan et al., 2017) in which FoF was assessed with a falls-efficacy scale. Thus, the intervention related to FE improvement rather than a decrease in FoF. It is impossible, therefore, to conclude whether FoF decreased after the intervention. Hence, it is important to clearly differentiate FoF from FE.

### **2.5.2. Falls-efficacy**

Falls-efficacy is based on Bandura's theoretical framework of self-efficacy (Figure 3). Self-efficacy theory involves a cognitive mechanism which mediates between thoughts/emotions and actions

(Bandura, 1986). It consists of two components. The first is efficacy expectations and the second is outcome expectancy. Efficacy expectations relate to one's perception on the ability to undertake an action required to achieve certain performance.

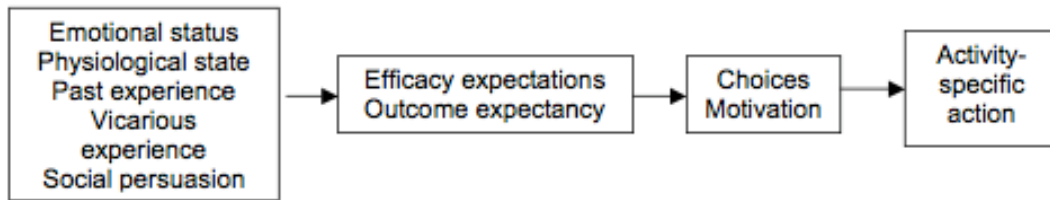


Figure 3. Theoretical framework of self-efficacy (Bandura, 1986).

In this meaning, FoF ought to be understood in terms of one's perceived ability to engage in essential, relatively non-hazardous tasks without falling (Tinetti et al., 1994). Individuals who show greater self-efficacy persist for longer when encountering obstacles which in turn reinforces their sense of self-efficacy. That is, past performance experience reinforces self-efficacy whereas previous failings reduce self-efficacy. Based on Bandura's work, decreased balance confidence is linked to reduced performance (Miller et al., 2001).

The traditional view of FoF and FE as interchangeable concepts is incorrect and conceptually problematic (Hadjistavropoulos et al., 2011). Low FE and excessive FoF are significant psychological outcomes of falling, but they are distinct constructs that may play different roles in fall risk. Hadjistavropoulos et al. (2011) developed one of the most prominent models in the area of falls - the Multifactorial Causation Model of Falls and Fear, which moved the theoretical discussion forward by differentiating FoF from FE and other constructs such as anxiety.

## 2.6. The Multifactorial Causation Model of Falls and Fear

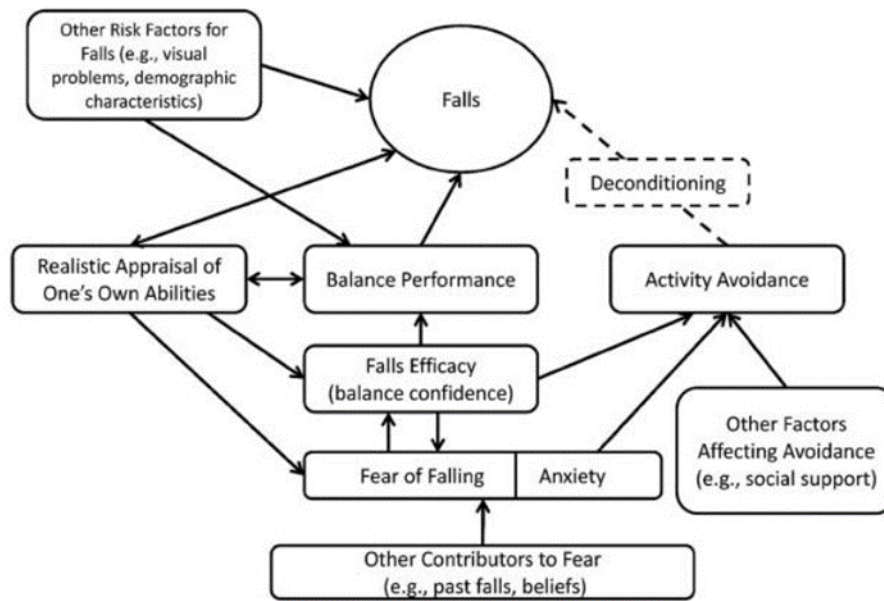


Figure 4. The Multifactorial Causation Model of Falls and Fear (Hadjistavropoulos et al., 2011).

In the Multifactorial Causation Model of Falls and Fear (Hadjistavropoulos et al., 2011) FoF and FE are distinct constructs that contribute to fall risk differently (Figure 4). Low FE and high FoF are significant psychological outcomes of falling. However, it is most likely that FE is a component of a multidimensional FoF construct. FoF originates from one's appraisal of their abilities to maintain balance in relation to other contributors (e.g. beliefs, falls history). The researchers proposed that fear and anxiety influence balance which in turn influences falls occurrence. They differentiated fear from anxiety by explaining that one may be always fearful towards a specific situation, action, event, but one would only experience anxiety while performing, preparing to perform or remembering performing the action. Self-efficacy beliefs are related to FoF because beliefs affect fear. That is, people who are confident that they will not fall, will be less likely to show high levels of FoF.

### 2.6.1. Fear and anxiety distinction

The fear and anxiety distinction proposed by Hadjistavropoulos et al. (2011) is however problematic in the light of the work of Caroline and Robert Blanchard (2008). Fear and anxiety are both emotional responses to aversive events. Caroline and Robert Blanchard (2008) claimed that anxiety is the response to potential, rather than present threat. Anxiety relates to subjective feelings and worries in which one's thoughts are focused on some, probably poorly specified, future negative outcome (Barlow, 2002; Blanchard & Blanchard, 2008), while according to Hadjistavropoulos et al. (2011), one is anxious when performing, preparing to perform or remembering performing the action. Fear is a basic, adaptive and protective response towards a current, identifiable threat

(Barlow, 2002). It is accompanied by strong physiological responses such as fight or avoidance (Blanchard & Blanchard, 2008). The difference between the two constructs may be related to the degree of uncertainty (Carleton et al., 2007). Individuals who are intolerant of uncertainty are likely to show higher levels of anxiety when engaging in situations with uncertain outcomes (Dugas, Gosselin, & Ladouceur, 2001).

There is a large body of evidence to support the distinction between fear and anxiety. Research suggests that fear and anxiety are controlled by different underlying brain mechanisms (Gray & McNaughton, 2000; McNaughton, 2011). There is also some evidence from behavioural pharmacology supporting the distinction (McNaughton, 2011). Researching the effects of drugs on behaviour has a particular advantage. Drugs affect receptor systems which have been conserved by evolution. That is, it is possible to study a drug's influence on the neural system and behaviour in animals and tentatively apply the findings to the human population (McNaughton, 2011). Caroline and Robert Blanchard adopted that approach and compared the effects of different drugs on different behaviours. In particular, drugs used for treating generalized anxiety disorder reduced defensive behaviours such as risk assessment in response to an approach/avoidance conflict (Blanchard et al., 1997). On the other hand, panic disorder drugs reduced "flight" response behaviours, not affecting other behaviours (Blanchard, Griebel, & Blanchard, 2001). In the study conducted on rats, it was found that anxiety-related behaviours (cat potentially present) were sensitive to an anxiety relief drug (anxiolytic), but the drug was not successful in the fear-related situation, when a cat was present (Blanchard & Blanchard, 1990).

Given the above research, the distinction proposed by Hadjistavropoulos et al. (2011) seems no longer accurate. That is, instead of the assumption that one may be always fearful towards a specific situation, action, event, but one would only experience anxiety while performing, preparing to perform or remembering performing the action; actually, one may be always anxious but only experience fear when faced with a particular fear-provoking situation.

## **2.7. De-stigmatisation of FoF**

Traditionally, FoF appears to be perceived as always negative and no magnitude of FoF, such as protective- maladaptive, is predicted by the theory. However, FoF may be an inborn fear that is adaptive and protective (Adamczewska & Nyman, 2018). It has been found that FoF is expressed by fallers and non-fallers (Hellström et al., 2009; Legters, 2002). Mahler & Sarvimäki (2012) reported that older adults are accompanied by FoF and an ability to manage their challenges. While FoF is still often described as limiting physical activity, the results of the study by Mahler & Sarvimäki (2010) showed that older adults accepted their FoF and viewed it mainly as a question of finding a realistic balance in daily life. The study showed that FoF may not necessarily have negative

influence on people. In fact, FoF may be an inborn fear. The evidence comes from one of the classic experiments conducted by Gibson and Walk (1960). The authors faced infants with a visual cliff and the infant crawled away from it, hence, they perceived the cliff as dangerous. In that sense, FoF protects from danger. FoF can even be considered as “healthy and natural” which is protective in some cases, such as right after an injury FoF may prevent an older adult from undertaking relatively risky activities. On the other hand, a deficiency of FoF may cause people to undertake activities which may lead to falling. Allali et al. (2017) reported that FoF was not predictive of falls when adjusting for age and gender. The authors speculated that FoF was actually a protective mechanism employed by individuals with mild parkinsonian signs regarding their motor limitations.

### **2.7.1. History of falling, FoF and FE**

As traditionally believed, FoF is always negative therefore it could be expected that FoF related to increased number of falls. The Multifactorial Causation Model of Falls and Fear (Hadjistavropoulos et al., 2011) assumes that history of previous falls influences FoF and consequently FE which is in accord with that common view that FoF and falls are always interconnected. However, that assumption has been challenged by several studies (Jørstad et al., 2005; Suzuki et al., 2002). Some studies have raised doubts about FoF predicting falls (Allali et al., 2017; Basaran et al., 2016; Clemson et al., 2015; Palagyi et al., 2016). Pohl et al. (2015) found no evidence that FoF is an indication of increased risk of future recurrent falls.

Other studies have suggested that falls may not result in FoF occurrence. Clemson et al. (2015) found that having an injurious fall may not predict FoF development. It is against the findings of the systematic review conducted by Scheffer et al. (2008) who found falls to be a very strong predictor for FoF. However, the difference in findings may relate to the differences in the assessment tools applied. Scheffer et al. (2008) included falls-efficacy measures to assess FoF, while Clemson et al. (2015) assessed FoF with a one-item tool. Thus, Scheffer et al. (2008) might have actually found that history of falls is a risk factor for decreased falls-efficacy, rather than FoF. It is in line with the findings of Kumar et al. (2014) who found a relationship between falls history and the score on the FE measure. Moreover, reduced FE has been found to be a strong fall predictor (O’Halloran et al., 2011), and fallers tend to show lower FE comparing to non-fallers (Hellström et al., 2009). That is, FE may actually be a better predictor of falling than FoF (Hadjistavropoulos et al., 2007).

Clemson et al. (2015) found that profiles of people who develop FoF differed from the profiles of people who fall. Predictors for FoF were increasing age, poor physical performance, decreased social engagement, female gender and cognitive impairment. Predictors of injurious falls were increasing age, frailty and depression. It is particularly interesting that feelings of depression were found to be a predictor of falling, but not FoF. Depression is an anxiety disorder, therefore the tools

used to assess depression might have captured feelings of anxiety (Goldberg, 2010). Hallford et al. (2017) found in their meta-analysis that individuals who report anxiety were more likely to have a fall comparing to people without anxiety. The findings suggest that, rather than FoF, anxiety is more related to falling.

### **2.7.2. Anxiety, FoF and FE**

The research on anxiety and FoF has provided mixed results. FoF has been found to be independently associated with anxiety (Van Haastregt et al., 2008), significantly correlated with anxiety and depression (Gagnon et al., 2005), and even predicted by anxiety (Painter et al., 2012). However, Ribeiro & Santos (2015) reported no correlation between FoF and anxiety. FoF was associated with many other factors, such as low perceived control over falling, reduced balance, and low falls efficacy. Similarly, anxiety was related to low falls efficacy, worse balance, and low perceived control. Surprisingly, in a logistic regression analysis, only one item of falls-efficacy scale (self-confidence in performing housekeeping) and one item from anxiety assessment (“I am often too nervous”) explained FoF which is against the traditional FoF and falls-efficacy association or even treating FoF as low falls efficacy.

Ribeiro and Santos (2015) suggested that FoF leads to activity restriction, which in turn leads to distress. This is however different from what Hadjistavropoulos et al. (2011) proposed in the Multifactorial Causation Model of Falls and Fear, where FoF does not directly lead to activity restriction, but this is done via falls efficacy. Moreover, according to Hadjistavropoulos et al. (2011), fear and anxiety operate at the same level, where one does not affect the other and are experienced at different situations: constant fear towards a specific situation and anxiety is experienced while performing certain actions.

It may be speculated that anxiety is related to FoF only after falling. Austin et al. (2007) found that depression did not predict new-onset FoF but it predicted persistent FoF. In fact, individuals with persistent FoF were more likely to report more falls, thus it may relate to some dose-effect relationship. Once a certain fall-related threshold is reached, maladaptive FoF is encountered by older adults, which may potentially be related to increased anxiety and reduced FE. In fact, anxiety has been found to be associated with FE (Payette et al., 2016). Torres et al. (2019) found that depression and anxiety-provoking situations, such as worries about health, family, finances, were significant predictors for FE. Furthermore, Payette et al. (2017) reported that FE score had a stronger relationship with generalised anxiety disorder than with fall risk. Given that according to Hadjistavropoulos et al. (2007), FE is a better falls predictor than FoF, it may therefore be assumed that anxiety and FE are much more crucial fall-related factors than FoF.

### **2.7.3. Post-fall anxiety**

Injurious falls are associated with increased anxiety (Jiang et al., 2016). Anxiety can make older adults feel less confident about their abilities (Gagnon et al., 2005; Chu et al., 2011; Ribeiro & Santos, 2015). It has been previously reported that physical trauma often results in a long-term anxiety and depression (Wiseman et al., 2015). Moreover, Oh et al. (2019) found that injurious falls in the previous year were associated with an increased risk of mortality, which was not the case with non-injurious falls. That is, the role of post-fall anxiety should not be underestimated, since it may have severe and long-lasting consequences for older adults.

Since anxiety may have only negative impact on older adults, much research have been devoted to investigate its negative influence on balance performance. For instance, Delbaere et al. (2009) demonstrated that concern about falling resulted in larger alterations in walking speed in the conditions that posed a postural threat. Hadjistavropoulos et al. (2012) manipulated anxiety levels while participants performed dual tasking. There were two conditions: a high-level anxiety condition in which participants were asked to walk on an elevated platform, and a low-level condition in which participants walked on the floor. Anxiety negatively affected balance performance. Higher levels of anxiety caused participants to walk more slowly, take shorter steps and increase gait variability. Yamada et al. (2011) demonstrated that anxiety contributes to poorer stepping accuracy, thus increases the risk of falling. The authors measured eye movement behaviours of older adults during locomotive tasks. Participants with higher levels of anxiety stepped on a target, transferred their gaze away from a stepping target earlier than participants with lower anxiety levels (Yamada et al., 2011).

Hadjistavropoulos et al. (2011) limited the role of anxiety to influencing activity and affecting FE. The authors did not further explore the interplay between FoF and anxiety. The important distinction between fear and anxiety is maladaptivity. Anxiety may have much more global implications for an individual than FoF. Some degree of FoF may be in fact adaptive, but FoF becomes a problem when it is related to debilitating anxiety which interfaces with an activity (Lachman et al., 1998). Anxiety in that case always has a negative impact on people and Painter et al. (2012) found that FoF was predicted by anxiety. Since FoF can be considered an inborn and protective from danger fear (Adamczewska & Nyman, 2018), the presence of post-fall anxiety may be related to maladaptivity of FoF.



## **2.8. Severity of the “post-fall syndrome”**

Excessive concerns can take the form of an anxiety disorder, including concerns about falling. In fact, FoF is now recognised in the specific phobia section of the *Diagnosis and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013)*. Anxiety symptoms remain common in older adults (Byers et al., 2010). Furthermore, subthreshold manifestations of anxiety are also prevalent among older adults, affecting around 26% of the population (Grenier et al., 2011). The common feature of anxiety disorders is the excessiveness of fear and anxiety (APA 2013). In fact, excessive fear and anxiety are central constructs in posttraumatic stress disorder (PTSD; Lissek et al., 2005). It can be speculated that some fallers may experience PTSD, since PTSD involves fear (Simms et al., 2002; Zoellner et al., 2011).

PTSD is a result of a trauma exposure (APA, 2013), therefore there may be a possibility to define falls as trauma. Falls relate to high rates of injuries (Kenny et al., 2013), mortality (Turner et al., 2015) and disability (James et al., 2020). Unexpected injury/illness to someone close or their own are one of the most serious stressors among older adults (Pietrzak et al., 2012). Loss of physical integrity and injury can lead to PTSD among older adults (Elklit & O’Connor, 2005). Furthermore, older adults may show PTSD symptoms before falling, which may be related to e.g. loss, retirement or changes in social or financial support that may make them vulnerable towards new stressors like falls (Averill & Beck, 2000).

The number and frequency of fall risk factors (Skelton & Todd, 2004) may potentially relate to older adults’ increased anxiety over future falling since they may find the risk relevant to them. In fact, Delbaere et al. (2010a) reported that 1 in 10 older adults perceive their fall risk as more severe than it actually is. Injurious falls can cause psychological trauma to older adults which makes the fall recovery difficult due to the interplay of physiological and psychological factors. Moreover, Oh et al. (2019) reported that older adults who were concerned about falling after injurious falls, had higher mortality rates. That is, falls may have severe psychological consequences for older adults which should not be neglected. The next section of the thesis will therefore focus on the problem of post-fall PTSD.

## **2.9. Posttraumatic stress disorder**

The term PTSD denotes the prevailing psychiatric framework for understanding a negative and distressing response to a traumatic experience. Unlike other disorders (e.g., anxiety, depression), PTSD rests on the assumption that distress derives directly from a specific event capable of inducing intense subjective reactions of fear (Rosen & Lilienfeld, 2008). The main diagnostic features of PTSD include repeated reexperiences of trauma in the form of e.g. flashbacks, intrusive thoughts,

or nightmares, avoidance of trauma-related reminders, and increased arousal such as irritability and hypervigilance. The concept of PTSD has been successfully applied in the assessment and treatment following many other types of traumatic experience. Over the past decade, it has been recognised that some falls can be traumatic and there has been a growing interest in post-fall PTSD. The following section will present the review of previous studies on the subject of post-fall PTSD.

## **2.10. Previous research on post-fall PTSD**

### **2.10.1. Search strategy**

PubMed, PsychInfo and Cinahl databases were searched on 9<sup>th</sup> February 2020 for the articles which were originally designed studies with subjects over 60 years old and considered falls as trauma, and included the evaluation of the psychological consequences. Additionally, the reference lists of selected papers were screened to identify other citations. The search results were limited to papers written in English. Titles and abstracts were searched using the following terms:

Population	Older adults OR elderly OR geriatric OR geriatrics OR aging OR ageing OR senior OR seniors OR older people
Falls	Falls OR falling
PTSD	PTSD OR posttraumatic stress OR post-traumatic stress OR post traumatic stress

The search was not restricted by date or publication status. The search strategy generated 25 citations from database searches. Three duplicates were removed. There were five studies identified which met the criteria. A summary of the studies is presented in Table 1.

	<b>Chung et al. (2009)</b>	<b>Jayasinghe et al. (2014)</b>	<b>Bloch et al. (2014)</b>	<b>Kornfield et al. (2017)</b>	<b>Eckert et al. (2019)</b>
Participants	196 (90 completed)	100	36 (23 completed)	456 (350 completed)	115
Female	167 (85%)	59 (59%)	31 (86%)	352 (77%)	87 (76%)
Age	83.4 (6.90)	84 (65-97)	87.3 (6.7)	78.8 (8.7)	82.5 (6.8)
Inclusion criteria	<ul style="list-style-type: none"> <li>• Aged 65 or older</li> <li>• Fall-related injury that required hospitalisation</li> </ul>	<ul style="list-style-type: none"> <li>• Aged 65 or older</li> <li>• Fall-related injury that required hospitalisation</li> </ul>	<ul style="list-style-type: none"> <li>• Aged 75 or older</li> <li>• Fall that required emergency department visit</li> </ul>	<ul style="list-style-type: none"> <li>• Aged 60 or older</li> </ul>	<ul style="list-style-type: none"> <li>• Aged 60 or older</li> <li>• Hip or pelvic fracture</li> <li>• Presence of FoF</li> </ul>
Exclusion criteria	<ul style="list-style-type: none"> <li>• Cognitive impairments</li> </ul>	<ul style="list-style-type: none"> <li>• Cognitive impairments</li> <li>• Schizophrenia</li> <li>• Bipolar disorder</li> <li>• Substance abuse</li> <li>• Aphasia</li> </ul>	<ul style="list-style-type: none"> <li>• Health status incompatible with the interview</li> </ul>	<ul style="list-style-type: none"> <li>• Depression</li> <li>• Nonambulatory before the fracture</li> <li>• Moderate to severe cognitive impairments</li> <li>• Metastatic cancer</li> <li>• Interferon treatment</li> <li>• Inoperable fracture</li> <li>• Visual, language or auditory impairment</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient cognitive capacity</li> </ul>
Assessment time	14 days post-fall (5-28 range)	3 days post-fall (0 – 69 range)		2 days post- surgery	
Follow-up	<ul style="list-style-type: none"> <li>• 12 weeks</li> <li>• 24 weeks</li> </ul>		<ul style="list-style-type: none"> <li>• 2 months</li> </ul>	<ul style="list-style-type: none"> <li>• 4 weeks</li> <li>• 12 weeks</li> </ul>	
<b>PTSD</b>					
Assessment	PDS	PSS	PCL-S	PCL-S	Self-developed questionnaire
Diagnosis	DSM-IV diagnostic criteria	Cut-off points	Cut-off point	DSM-IV diagnostic criteria	Sum score with a range from 0 to 18
Prevalence	<ul style="list-style-type: none"> <li>• At 12 weeks: 26% - full and partial PTSD</li> <li>• At 24 weeks: 27% - full and partial PTSD</li> </ul>	27% - “substantial” PTS	At 2 months: 26% - full PTSD	<ul style="list-style-type: none"> <li>• At 4 weeks: 13% partial PTSD</li> <li>• At 12 weeks: 7% partial PTSD</li> </ul>	Score: 5.1 (4.2) Recollections of the event: 49% - occasional 20% - frequent

PDS: The posttraumatic stress disorder scale, PSS: The Post-Traumatic Stress Symptom Scale, PCL-S: Posttraumatic Stress Disorder Checklist—Specific.

Table 1. Main findings of previous studies exploring post-fall PTSD.

### **2.10.2. “Posttraumatic stress disorder in older people after a fall”**

Chung et al. (2009) aimed to determine the prevalence and correlates of PTSD among recent fallers. The study involved two follow-up assessments at 12 and 24 weeks post-baseline. PTSD was assessed with the Posttraumatic Stress Disorder Scale (PDS; Foa, 1995) in which participants were first asked to report occurrence of a number of traumatic events and choose one that bothered them the most. Then they rated the occurrence of the 17 PTSD symptoms on a 4-point Likert scale, ranging from 0 (“not at all”) to 3 (“almost always”). PTSD diagnosis was achieved according to DMS-IV criteria, i.e. at least one re-experiencing symptom, three avoidance symptoms and two arousal symptoms.

The authors reported that only 5.6% participants reported no PTSD symptoms at baseline, while 35% met the diagnostic criteria for full acute PTSD diagnosis. At first follow-up, the number of individuals without PTSD symptoms increased (29%) and at the same time, only 10% of fallers had full and 16% had partial PTSD diagnosis. At second follow-up, 4% of fallers had full diagnosis of PTSD, and the number of participants who had partial diagnosis increased up to 23%.

No consistent predictive factors for the development of the disorder were found at both time points. Older age, low falls efficacy, pre-fall activity problems and anxiety were all associated with PTSD diagnosis inconsistently at either the first or second follow-up. Moreover, anxiety and depression were both associated with PTSD when assessed concurrently at follow-up. The inconsistent, mixed results created an unclear picture of PTSD after falls in older age.

### **2.10.3. “Posttraumatic stress symptoms in older adults hospitalized for fall injury”**

Jayasinghe et al. (2014) aimed to gather data on early PTSD among hospitalised fall patients. The authors utilised the Post-Traumatic Stress Symptom Scale (PSS; Foa et al., 1993) to assess the presence and severity of PTSD. The tool involves 17 questions, each item having four optional responses scored 0 (“not at all”) to 3 (“a lot”). Substantial PTSD was defined as total score of 11 or greater.

Substantial PTSD was reported by 27% of participants. PTSD symptoms were associated with unemployment, female gender, lower level of education and number of medical problems. Injury to back/chest was also found to be associated with PTSD which is quite unique in the literature. Head injury was not found to be associated with PTSD even though it has been found in other studies (Riggio, 2010). Furthermore, the severity of injury was not related to PTSD.

Since one of the findings was that educational level and unemployment are related to PTSD, the authors speculated that the educational level and unemployment may be related to cognitive reserve

and financial vulnerability which may modulate stress experience and coping ability. Kim (2016) found that employment was a factor associated with outdoor injury, therefore the authors suggested that employed individuals tend to be more active than unemployed and as a result, their health status may be better. Furthermore, anxiety disorders are more common among less educated people and women (Chand et al., 2014).

#### **2.10.4. “Anxiety after a fall in elderly subjects and subsequent risk of developing post traumatic stress disorder at two months. A pilot study”**

Bloch et al. (2014) conducted a pilot study in which they speculated that PTSD may be a delayed response to falls. Fall patients were initially assessed at emergency department and followed up two months later. Posttraumatic stress disorder was assessed with PTSD Checklist – Specific (PCL-S; Blanchard et al., 1996). This is a 17-item questionnaire designed to assess symptomology, enabling diagnosis and indication of symptoms severity. It was found that at two months follow-up, 26% of fallers had full PTSD diagnosis (determined by the cut-off point).

Falls history, immediate post-fall anxiety and ability to get up without assistance were significant predictors of PTSD at two months follow-up. Furthermore, Bloch et al. (2014) reported a negative correlation between PTSD score and age, which is also what Chung et al. (2009) found. Bloch et al. (2014) suggested that after a fall different forms of anxiety develop, such as simple anxiety to more complex states associated with a post fall syndrome. The symptoms can either resolve spontaneously, or develop to PTSD, or FoF. According to the authors, each requires a different form of rehabilitation.

#### **2.10.5. “Correlates of fear of falling and falls efficacy in geriatric patients recovering from hip/pelvic fracture”**

Eckert et al. (2019) aimed to gain a better understanding of FoF and in order to do so, they explored associations between FoF and FE, fall-related posttraumatic stress symptoms, physical performance and psychological flexibility. Posttraumatic stress symptoms were assessed with the questionnaire developed by the researchers based on DSM-IV criteria which asked how frequently participants experienced each posttraumatic symptom.

Among 115 participants, 29% of them reported occasional and 22% of them frequent posttraumatic stress symptoms. It was found that PTSD was significantly correlated with anxiety and FoF, but not significantly correlated with age. Path analyses further revealed that FoF was directly associated with PTSD symptoms. However, FE was not related to PTSD, but to poor physical performance.

### **2.10.6. “Predictors of Posttraumatic Stress Symptoms and Association with Fear of Falling After Hip Fracture”**

Kornfield et al. (2017) conducted a 12 weeks long study to determine whether fall-related hip fracture is likely to induce PTSD among older adults. PTSD symptoms were assessed with the PCL-S twice – at 4 and 12 weeks. Similarly to Chung et al. (2009), the researchers applied DSM-IV diagnostic criteria to determine PTSD presence. None of participants developed full PTSD at either follow-up. Only 13% of fallers had partial PTSD at four weeks, and 7% at 12 weeks. The authors that individuals with high baseline levels of depression and stress had higher PTSD scores 12 weeks after surgery.

### **2.10.7. Summary of the research on post-fall PTSD**

PTSD prevalence among fallers varies, depending on the assessment strategy applied (e.g. using cut-off points) and population studied. For instance, cut-off points were applied by Bloch et al. (2014), who found that 26% of fallers developed full PTSD diagnosis; and by Jayasinghe et al. (2014), who reported that 27% of participants experienced “substantial” posttraumatic stress. However, Chung et al. (2009) did not employ such strategy, but also found high prevalence of full acute PTSD diagnosis at baseline (35%), but much lower at 12 weeks (10%), and 4% at 24 weeks (4%). On the other hand, Kornfield et al. (2017) found that nobody developed full PTSD at any time point. The reason for such low prevalence may be related to the inclusion criteria employed by the researchers.

Kornfield et al. (2017) selected various exclusion criteria which involved vision impairments. However, the authors did not specify the kind and the magnitude of the impairment. Furthermore, vision problems are not uncommon among traumatised individuals (Trachtman, 2010). PTSD alone, as an emotional reaction, can cause problems with vision since it interferes with the function of tears, the retina, cornea and the ciliary muscle (Trachtman, 2010). Thus, excluding individuals with vision impairment presumably might have excluded some individuals with PTSD symptoms.

Most importantly, Kornfield et al. (2017) excluded individuals with mild or major depression, while, in fact, the researchers reported significant associations between PTSD and depression. PTSD and depression are commonly co-occurring conditions (Ikin et al., 2010), and depression is a risk factor for PTSD development (Chang et al., 2017). It has been reported that 91% of individuals with PTSD have comorbid diagnosis (Bryant et al., 2010), which indicates that there may be underlying processes that lead to such comorbidity. Thus, the authors potentially excluded individuals who were likely to report post-fall PTSD.

In fact, depression appears to be the only factor associated with PTSD that seems to emerge from the studies. Chung et al. (2009), Eckert et al. (2019), and Kornfield et al. (2017) demonstrated that baseline depression related to increased PTSD symptoms. Moreover, Bloch et al. (2014) reported that immediate post-fall anxiety related to more severe PTSD experience. The only study which did not find such association was the study conducted by Jayasinghe et al. (2014) due to the lack of depression or anxiety assessment in their study.

The studies present a very unclear picture on the risk factors for PTSD development. For instance, Bloch et al. (2014) and Chung et al. (2009) found that PTSD score was associated with age, while Eckert et al. (2019) did not find such association. Furthermore, one of the major results of the study conducted by Bloch et al. (2014) was that history of falls was a predictor of PTSD at two months follow-up. However, Eckert et al. (2019) found that previous falls were not associated with PTSD, as well as with FE and FoF. The only factor that was significantly related to falls history was the perceived ability to manage falls.

The results of previous studies suggest that PTSD after falling is not uncommon, yet there is very limited agreement between them on the factors related to PTSD development. Furthermore, none of the studies explored the meaning of PTSD in older adults' recovery and life. That is, even if PTSD is reported by a minority of fallers, the severity of fall-related consequences may potentially be an overwhelming experience which can preclude fall rehabilitation. Thus, there is a need for further investigation on factors associated with PTSD, as well as the impact of PTSD on fallers' life and recovery.

## **2.11. Summary**

Falls are highly prevalent among older adults and may have severe consequences for them, since around half of falls that require emergency department visit result in fractures. Falls are also related to disability and increased mortality. Given the fact that the population is ageing globally, the issue of accidental falls is a serious healthcare problem, which involves an increasing cost related to the treatment of fall-related injuries.

Amongst the psychological factors most commonly associated with falling is FoF, which lacks a clear definition and it is assessed in various ways which affects the results of the studies investigating it. FoF is traditionally believed to be always negative, while it can be inborn, adaptive and protective. The assumption that FoF is negative and related to falls has been challenged by studies that found no associations between them, suggesting that other aspects may be more related to falling. Thus, FoF may not be the most severe consequences of falling, but other factors such as decreased FE, which relates to one's perceived ability to engage in various activities without falling. Indeed,

Delbaere et al. (2010a) demonstrated that older adults' functional activity may not necessarily be related to their physiological fall risk, but to their FE.

Hadjistavropoulos et al. (2011) developed one of the most prominent models in the area of falls - the Multifactorial Causation Model of Falls and Fear which differentiated FoF from FE and other constructs such as anxiety. However, it involves some aspects that require further clarifications, such as the roles of FoF and anxiety. The model appears to treat the factors as a cluster, rather than two separate constructs that may influence each other. Furthermore, it assumes that FoF and anxiety are experienced at different situations: constant fear towards a specific situation and anxiety is experienced while performing certain actions. However, anxiety may be responsible for maladaptivity of FoF, since FoF can be protective, but anxiety has always negative impact on older adults.

PTSD is a result of a trauma exposure, therefore there may be a possibility to define falls as trauma. Falls can have severe consequences on older adults, such as increased anxiety, depression and decreased falls-efficacy. Excessive concerns over falling may relate to PTSD which can be a severe form of post-fall syndrome. Previous research on post-fall PTSD did not provide any clear conclusions on PTSD susceptibility, and it did not explore the influence of PTSD on older people's lives.



### **3. Theoretical perspectives**

Whilst the literature review of the topic of falls revealed that falls can have severe consequences for older adults, including PTSD development, little is known about how post-fall PTSD can develop among the elderly. Furthermore, the effect of fall-related trauma on older people's recovery and lives has not been explored. The present chapter starts with the definition of trauma and then presents theoretical models of PTSD. However, it is important to present the issue of PTSD in the context of lifespan development. Older adults live long enough to potentially accumulate various negative experiences, which may have detrimental effects on them in their late adulthood. Moreover, Poland, which is the country where the study took place, has been exposed to numerous aversive events. They could have been experienced by the vast majority of Poles, which might be related to high rates of PTSD in Poland.

The second part of the chapter focuses on the impact of trauma on an older person's life. The Life Thread Model (Ellis-Hill et al., 2008) is proposed as a way to understand the meaning of falls, since it recognises health issues as transition. The model highlights the importance of striving to recreate a sense of self through the development of a life thread metaphor. It relates to weaving together different life stories into a coherent overarching self-narrative. This process focuses on all those threads which have been disrupted through injury. When these threads are intact, they provide the basis for continuity. However, some threads need to be reconnected to make sense of one's life. This is where the second model is proposed – the Selection, Optimisation and Compensation model (SOC) developed by Baltes & Baltes (1990). It is a model of adaptivity, the potential and preparedness for dealing with a variety of demands. In contrast to common pessimistic pictures of the lifespan, SOC considers how adaptivity may be preserved in the course of ageing, and how it may be enhanced with the strengths that come from increased expertise, specialisation and individuality of old age (Baltes, 1987).

These models have been chosen because they enable for a deeper understanding of the impact of falls on an older person's life, as well as how the individual approaches their recovery. Thus, the following chapter explores the theories used and how they relate to the subject of the research. The application of the theories to the area of falls is discussed, where appropriate.

#### **3.1. Defining trauma**

Worldwide trauma exposure is encountered by nearly 70% of people during their life-time (Koenen et al., 2017). Despite that very high number of people exposed to trauma, it was not until 1980 when PTSD was first defined as a diagnosis when it was included in the third edition of the Diagnostic and Statistical Manual (DSM-III; American Psychiatric Association, 1980). There was a need to

account for the difficulties Vietnam veterans experienced, such as flashbacks, difficulty sleeping or oversensitive reactions that were commonly considered delusional at that time (Stein, 2015).

Since the most recent edition of DSM (APA, 2013), there has been a debate over the nature and definition of PTSD. For instance, in one multinational study, Stein et al. (2014) found that using DSM-IV criteria resulted in detection of 3.3% of traumatised individuals, while DSM-5 reported only 3%. Roth, et al. (2016) also found higher prevalence of PTSD using DSM-IV comparing to DSM-5. Furthermore, no participants screened negatively using DSM-IV criteria and positively using DSM-5 criteria, suggesting tightening in the eligibility for receiving a PTSD diagnosis. Thus, choosing the diagnostic tools seems crucial in order to avoid neglecting individuals who struggle with trauma-related symptoms, who may receive the diagnosis using one tool but not the other.

#### **3.1.1.1. DSM-5**

According to the newest edition of DSM, DSM-5, (APA, 2013), PTSD is now under the category “Trauma and Stress-related Disorders” and is no longer considered anxiety disorder. There are several criteria that need to be met for the diagnosis of PTSD according to DSM-5. The first criterion, criterion A, relates to stressors, such as direct exposure or witnessing the trauma, learning that someone was exposed to trauma, indirect exposure to aversive details of trauma. Criterion B relates to intrusion symptoms such as nightmares and flashbacks. Criterion C involves avoidance symptoms such as avoiding thoughts or feelings related to trauma. Criterion D includes negative alterations in cognitions and mood such as inability to recall some aspects of trauma, negative affect or decreased interest in activities. Criterion E relates to alterations in arousal and reactivity such as hypervigilance and difficulty sleeping. Criterion F states that the symptoms should persist for at least one month. Criterion G relates to functional significance, that is, symptoms should create distress and functional impairment. Criterion H excludes symptoms caused by illness, medication or substance abuse.

#### **3.1.1.2. DSM-5 criticism**

There are several problems related to the new classification. First, criterion H removed life-threatening illness and injury which may potentially influence PTSD rates, since life threatening illness has been found to be one of the most common reasons for developing PTSD (Dulin & Passmore, 2010). Furthermore, under the new classification, falls do not have the potential to cause PTSD among the elderly. Secondly, PTSD is traditionally considered a type of anxiety disorder and is now excluded from them and moved to the category “Trauma and Stress-related Disorders”, which was heavily criticised by Zoellner et al. (2011) who claimed that there was not an evidence base for a distinct construct and PTSD shares symptoms features with other anxiety disorders and therefore should remain in the category.

Presumably, one of the most significant implications of the new DSM-5 relates to the fact that it undermines the centrality of fear in PTSD since the classification eliminated the component: “the person’s response involved intense fear, helplessness or horror”. It may be argued that PTSD was moved from the anxiety disorders category to the new category so PTSD is no longer considered an anxiety related mental illness, but a disorder linked to an external event which may therefore help de-stigmatising PTSD so more people may be likely to seek treatment. However, the constructs which were central to PTSD (anxiety and fear) lost some of their importance which poses a question what constitutes the core of PTSD under the new classification. In fact, Friedman et al. (2011) criticised that according to the new DSM, the emphasis is not on the reaction to the stressor, but on the stressor itself. While only a minority of people exposed to stressful events develop PTSD, thus according to the previous DSM, only those meeting the criteria for PTSD would require help, as opposed to everyone exposed to the stressor.

### **3.1.1.3. DSM-IV**

In the light of the above critique, the current thesis will apply the classification proposed by the previous DSM, DSM-IV (APA, 1994). According to DSM-IV, PTSD is classified in the “Anxiety disorders” category. Similarly to DSM-5, criterion A relates to the trauma exposure. That involves the experience, witnessing or confrontation with an event that involved actual or threatened death or *serious injury* or threat to the physical integrity of self or others. Criterion A is so-called “gatekeeper” that has the strongest impact on the prevalence of PTSD (Levin, Kleinman, & Adler, 2014) and the inclusion of injuries may potentially relate to higher prevalence of PTSD. Moreover, the criterion states that the person’s response involved intense fear, helplessness or horror. Criterion B relates to re-experiencing symptoms such as recurrent dreams and flashbacks. Criterion C involves avoidance of the trauma (i.e. effortful avoidance of thoughts, feelings, activities). Criterion D relates to increased arousal such as hypervigilance and irritability. Criterion E states that the symptoms should be present for at least a month; and the last criterion suggests that the disturbance should cause significant distress or impairment in functioning. The full diagnostic criteria of DSM-IV and DSM-5 are presented in the Appendix 1.

## **3.2. Theoretical models of PTSD**

Since the 1970’s, when researchers and therapists began to study and treat trauma survivors, they began to draw upon learning theory as an explanation for the symptoms they were observing. Across the main theoretical models for understanding the development and maintenance of PTSD is the centrality of classical conditioning (Brewin, 2001; Ehlers & Clark, 2000; Foa & Kozak, 1986; Keane et al., 1985; Pitman, 1988).

### **3.2.1. Fear conditioning**

Conditioning-based theories suggest that powerful associative learning occurs during trauma exposure that leads the person to recall the event with the same sense of seriousness and danger. That is, fear responses become paired with stimuli present during the event and consequently the previously neutral stimuli become capable of eliciting aversive reactions, even in the absence of present danger (Foa & Kozak, 1986). For instance, the path where one was walking when they got attacked becomes a conditioned stimulus. The path is associated with the traumatic event therefore it is feared. One may then want to avoid the path, the reminders of the event and even thinking of the event in order to decrease their anxiety in the short term. However, fear of thinking about the event increases and thus the PTSD symptoms are maintained.

### **3.2.2. Fear generalisation**

The intense responses are often not restricted to one particular stimulus linked to the trauma experience, but are rather generalised to a broad set of stimuli (Hermans et al., 2013). Generalisation of fear responses occurs when a fear response acquired to a particular stimulus transfers to another stimulus. This is often an adaptive response that allows people to quickly respond to a novel stimulus that is related to a previously learned stimulus. It becomes maladaptive when one inappropriately treats a nonthreatening stimulus as harmful, based on similarity to a known threat. For instance, if one is bitten by a neighbour's dog, then it is an adaptive response to fear that particular dog. Even with excessive fear towards that dog, one would be able to function. The problem arises when one can recognise other e.g. four legs animals as threatening (Dunsmoor, et al., 2009). Hence, the core of the problem is not so much in the intensity of the fear but in generalisation of that fear to a broader set of stimuli ultimately creating a fear network that is too broad (Hermans et al., 2013). The induction of fear by a wide range of stimuli poses much burden on a traumatised individual to the point one may not feel safe in every-day life (Hermans et al., 2013).

### **3.2.3. Negative appraisals of the self and the world**

Lang (1979) proposed that there is a certain fear network in PTSD. In this network, traumatic events are memorised through closely connected nodes. The traumatic memory consists of connections and associations between nodes representing sensory information about the trauma, emotional and physiological responses to trauma, and the meaning associated with it. When this network becomes activated, a traumatised individual experiences the same sensory, physiological and emotional reactions as it happened during the trauma exposure. Thus, constant expectations of a threat activate and maintain anxiety associated with PTSD. While others are able to differentiate a traumatic event as a distinct and unique occurrence, traumatised individuals fail to do so and consequently they are unable to process the trauma in a way that leads to healing and recovery (Clark & Ehlers, 2004).

Foa & Rothbaum (1998) further suggested that a level of subjective meaning is incorporated into the fear network and traumatic events violate a person's basic concept of safety. Normally, people hold rather positive cognitions about themselves and the world which tend to be stable over time (Taylor & Brown, 1988). Uncontrollable and unpredictable traumatic events have the potential to challenge the cognitions. Traumatized individuals, instead of assimilating trauma-related information into their existing cognitions, modify their core cognitions to incorporate a critical mass of inconsistent information.

Traumatized individuals tend to possess two central beliefs that relate to how these people perceive themselves, as incompetent, and the world around them, as dangerous (Foa & Rothbaum, 1998). Some support for the claim comes from the research conducted by Dunmore et al. (1999). They found that the persistence of PTSD was related to one's personality devaluation (e.g. "I am a loser"), one's safety (e.g. "There is no safe place"), and the world ("There is no safe world") which result in fear and avoidance of what is perceived as "dangerous". The cognitions motivate individuals to engage in avoidance which consequently reinforces perceptions about themselves and the world. Moreover, feelings of being incompetent decrease one's ability to cope with adversity and consequently one feels overwhelmed with their trauma. These cognitions are crucial since they are associated with the severity of PTSD (Dunmore et al., 2001). Furthermore, in a 17-years long study, Dekel et al. (2013) suggested that negative cognitions are fuelled by PTSD and conversely, chronic PTSD affects the cognitions. On the other hand, an extensive review conducted by Brown et al. (2019) found that the degree of reduction in negative post-trauma cognitions is associated with the reduction in PTSD symptoms. It suggests that targeting the cognitions may substantially improve one's PTSD severity.

#### **3.2.4. PTSD and self-efficacy**

In the previous chapter, self-efficacy was discussed in terms of one's perceived ability to engage in tasks without falling. The following section will focus on self-efficacy as the key factor in the process of coping with posttraumatic stress (Bandura, 1997). Self-efficacy relates to beliefs that one is able to manage their symptoms to unexpected events and to produce desired effects in a given activity (Bandura, 1997). It has the capacity to reduce PTSD symptoms through engagement in regulation of affective, cognitive, motivational and decisional processes (Bandura, 1997). Self-efficacy operates as a regulator of stress and anxiety. Individuals with high efficacy when faced with a traumatic experience, perceive the anxiety and stress as controllable and temporary (Cervone, 2000; Leganger et al., 2000). They tend to believe that they are healthier, more effective and more successful, comparing to people with low self-efficacy (Bandura, 1997). On the other hand, people with low self-efficacy do not believe they are able to manage their threats and view many aspects of

their environment as dangerous (Bandura, 1991; Benight & Bandura, 2004). ). They magnify the severity of their threats. They tend to worry about potential threats that may even never happen to them which impacts their functioning (Benight & Bandura, 2004). In the study conducted by Flatten et al. (2008), it was found that self-efficacy assessed immediately after trauma exposure correlated with PTSD development. Low levels of perceived self-efficacy were most strongly correlated with avoidance tendencies.

Previous studies have reported that higher levels of self-efficacy are related to lower levels of PTSD (Benight & Harper, 2002; Luszczynska et al., 2009). Nygaard et al. (2017) found that higher levels of PTSD were related to lower levels of self-efficacy at 3 and 12 months post-trauma exposure. From 12 months to 8 years after the experience self-efficacy was still negatively associated with PTSD, however, no evidence was found for the reverse relation. The results imply that in the long term, PTSD symptoms may lower self-efficacy, emphasising the importance of early trauma interventions to avoid possible negative consequences of PTSD on self-efficacy.

### **3.2.5. Lifetime perspective on trauma**

Characteristics of traumatic events may potentially contribute to the severity of PTSD. Darves-Bornoz et al. (2008) explored traumatic events which were potentially strongly associated with PTSD among older adults from Spain, Belgium, Germany, the Netherlands, Italy, and France. They found that when PTSD was present, the mean number of traumatic events was 3.2. The events most strongly associated with PTSD were interpersonal in nature such as rape, undisclosed private event, having a child with serious illness, beaten by partner, stalked, beaten by caregiver. Furthermore, timing of traumatic events, such as early life or late life, may impact the experience of PTSD. Colbert & Krause (2009) suggested that life as a whole and things that happen in the distant past, can leave traces that may be evident even half a century later. The severity of PTSD symptoms may depend on the nature and timing of the event. Several studies have found negative relationship between age at the time of the trauma and long-term PTSD (Draper et al., 2008; Zlotnick et al., 2009). Thus, it is crucial to place the trauma event within a lifespan context in order to obtain a better understanding of its implications for traumatised individuals.

#### **3.2.5.1. Timing of trauma**

According to Erikson's (1959), human development perspective, the lifespan is divided into stages and each stage poses a developmental challenge. Successful completion of each stage results in a healthy personality, but failure to complete a stage results in a reduced ability to complete further stages, thus, an unhealthier personality. Erikson's (1959) framework is not a testable theory, yet it provides description of psychosocial development across the entire lifespan, where middle and late adulthood are no longer viewed as irrelevant but are considered significant times of personal growth.

Trauma exposure may therefore severely affect the process of struggling with developmental challenges and the timing if the trauma may potentially influence the way PTSD is experienced. The next section focuses broadly on three stages of life – early life, midlife and late life, and how trauma exposure at each stage may affect individuals.

#### 3.2.5.1.1. **Early life**

Trauma during childhood results in impairments and dysregulation in diverse areas of functioning such as identity, affective or relational (Cloitre et al., 2009). Early life traumatisation is more related to the identity than later life trauma (Ogle et al., 2013), since adolescence is related to the struggle with forming key identities at this time. Teenagers explore who they are as individuals and seek to establish a sense of self (Erikson, 1959). It is an important process of forming a strong identity and developing a sense of direction in life (Erikson, 1959). Thus, trauma exposure may potentially impair the process and result in a lack of sense of direction in life.

Sexual assaults are 13 times more likely to occur during the first decades of life compared to ages 31-60 (Ogle et al., 2013), which is alarming since young adulthood is associated with forming intimate and loving relationships with others. Successful completion of the stage leads to the feelings of safety and a sense of commitment. Traumatic events at this stage may result in failure to complete the developmental task and lead to intimacy avoidance, fearing commitment, isolation and loneliness.

#### 3.2.5.1.2. **Midlife**

Midlife is associated with a zenith of social engagement and contributions to self and society are often at its height (Colbert & Krause, 2009). According to Erikson (1959), people at this stage express a need to create and nurture things that will outlast them. They tend to crave for making positive changes that will benefit other people. That can be done by raising their children, being involved in the community or being productive at work so individuals can develop a sense of being a part of the bigger picture.

Traumatisation at this stage may potentially disrupt individuals' ability to successfully complete their stage and reach their full potential (Colbert & Krause, 2009). Failure to complete their developmental task may result in shallow involvement in the world (Erikson, 1959). Some studies have suggested that midlife trauma more strongly predicted negative posttraumatic outcomes during older adulthood (Dulin & Passmore, 2010; Krause et al., 2004). It may relate to their feelings of being disconnected or uninvolved with the society as a whole (Erikson, 1959),

### 3.2.5.1.3. **Late life**

The final developmental challenge is encountered in late life and it relates to the crisis of integrity or despair. Seniors posed with that challenge, attempt to accept who they have become over the years which is accomplished by reconciling what one set out to do in life and what has actually been accomplished. If this crisis is resolved, people derive sense of meaning in life, but if the crisis is not resolved, then they are likely to slip into despair. Given the lifespan perspective proposed by Erikson (1959), encountering a traumatic event at this stage may be particularly problematic, since it may interfere with vitally important developmental challenge of meaning making and avoiding despair (Colbert & Krause, 2009). As a consequence, one may think that their trauma is undeniable evidence that things have not turned out as they should have (Colbert & Krause, 2009).

### **3.3. PTSD and old age**

According to Solomon & Ginzburg (1998) millions of older adults experienced traumatic events in their youth and traumatised individuals continue to experience PTSD in their later years. Older adults have lived long enough to potentially be exposed to many traumatic experiences, since there is an increased likelihood of encountering a traumatic event with age (Creamer & Parslow, 2008). Moreover, older adults might have accumulated many types of trauma over their life course. Approximately  $\frac{3}{4}$  of older adults aged 65 and older report one or more traumatic life events (Spitzer et al., 2008). Furthermore, PTSD can be exacerbated by stressors associated with ageing such as retirement (Port et al., 2001), widowhood (Elklit & O'Connor, 2005), health issues (Chung, Berger, & Rudd, 2008), and cognitive decline (Floyd, Rice, & Black, 2002). Thus, seniors are an ideal population within which to examine the persistence of symptoms associated with traumatic events experienced at different time points. However, PTSD among older adults has been a rather neglected subject and many large-scale epidemiological studies either have not separately examined PTSD in older adults, or even excluded seniors from the sample (Naomi Breslau, 2012).

The NCS-R reported that PTSD rates lower with age (Gum et al., 2009). That is, compared to adults aged under 64, seniors aged 65-74 showed PTSD rates of 0.6%, while only 0.2% of individuals aged 75+ showed PTSD (Gum et al., 2009). The World Health Organisation survey found the prevalence of 5.6% among over 71 000 respondents from 24 countries (Koenen et al., 2017). However, prevalence rates vary according to many factors, such as population being studied or even diagnostic criteria applied. Thus, some populations may show higher prevalence of PTSD compared to others, and Poland is an example of that. PTSD has been found to be highly prevalent among Polish people. For instance, 19.7% of university-level students met all PTSD criteria (Dragan et al., 2012). Moreover, the number of traumatised individuals increases with age, which is contrary to the NCS-R findings (Gum et al., 2009). In a study conducted on individuals aged 63-78 in Poland, it was



found that the prevalence reached 29.4% (Lis-Turlejska et al., 2016). Another study on individuals aged 71-97 found even higher prevalence – 38.3% (Lis-Turlejska et al., 2018). On the other hand, the prevalence of traumatised people over 60 years old in Western Europe is much lower – 4.6% in Netherlands (Bramsen & van der Ploeg, 1999) and 3.4% in Germany (Glaesmer et al., 2010). Interestingly, the rates of PTSD among older people in Poland are more similar to the rates of PTSD among military population that can be as high as 35.8% (Friedman, et al., 1994). One of the reasons for such discrepancy in PTSD rates among older adults in Poland and other countries may relate to the potential accumulation of traumatic events, since Poland is a place where numerous negative events have taken place (Lis-Turlejska et al., 2018).

### **3.3.1. Poland – a country of traumatised people**

Katarzyna Schier stated that “Poland is a country of traumatised people” (Schier, 2018). Indeed, PTSD is highly prevalent among Poles (Dragan et al., 2012; Lis-Turlejska et al., 2016), and the reasons for that may relate to several historical, social, economic and political struggles encountered in the past century. Poland belongs to the part of Europe that was described as the “blood land” by Timothy Snyder (2010), which refers to the area where regimes of Hitler and Stalin caused bloodshed and suffering much more severe than any witnessed in Western history. In fact, people in Poland experienced numerous conflicts and struggles in the last century that were not only limited to the WWII (Table 2). The severity and the number of stressors encountered by Poles may be the main reason for high rates of PTSD (Lis-Turlejska et al., 2018). That is, almost every decade presented Poles with potentially traumatic events.

During the WWII, approximately eleven million people were murdered and among them six million were Polish citizens. Around 2.7 million people of Jewish background and 1.9 million Polish Catholic citizens were murdered in the Holocaust; 1.7 million Polish non-Jews imprisoned in concentration camps in Siberia, and 2 million were deported as forced laborers for the German Reich (PWN, 2004). The recognition of war-related trauma has been limited to certain groups such as Nazi concentration camp survivors, neglecting other large groups of people who were prosecuted with anti-communists being one of them. They were prosecuted not only during the war, but for over a decade after the war and never recognised as “survivors” (Schäfer et al., 2018). It is estimated that the number of Poles deported to Siberia between 1941 – 1944 oscillated between 800 000 to 1.5 million, and those who were able to return lost their homes (Ciesielski, 1999).

<b>Year</b>	<b>Struggle</b>	<b>Outcome</b>
1914 – 1918	World War I	<ul style="list-style-type: none"> <li>• 450 000 killed</li> <li>• 900 000 injured</li> </ul>
1918 – 1919	Polish–Ukrainian War	<ul style="list-style-type: none"> <li>• 10 000 killed</li> </ul>
1918 - 1919	Greater Poland uprising	<ul style="list-style-type: none"> <li>• 2 500 killed</li> <li>• 6 000 injured</li> </ul>
1919 - 1921	Polish–Soviet War	<ul style="list-style-type: none"> <li>• 60 000 killed</li> </ul>
1939-1945	World War II	<ul style="list-style-type: none"> <li>• 644 000 died fighting</li> <li>• 3 577 000 died in concentration camps and death camps</li> <li>• 1 286 000 died due to emaciation, epidemics, tortures or imprisonment</li> <li>• 521 000 died due to injuries</li> </ul> <p>Material losses:</p> <ul style="list-style-type: none"> <li>• 37% of national capital lost</li> <li>• \$850 000 000 000 - total cost of material losses</li> </ul>
1944 - 1956	Stalinist regime	<ul style="list-style-type: none"> <li>• 160 000 - 320 000 died</li> <li>• 70 000 people deported to Gulag camps</li> </ul>
1956	Poznań protests of 1956	<ul style="list-style-type: none"> <li>• 49 killed</li> <li>• 239 injured</li> </ul>
1970	The Polish 1970 Strike	<ul style="list-style-type: none"> <li>• 40 killed</li> <li>• 1165 injured</li> </ul>
1981 - 1983	Martial law	<ul style="list-style-type: none"> <li>• 91 killed</li> <li>• 10 000 arrested</li> <li>• Rationing of food and goods</li> </ul>
1989 - 2004	The socio-economic transformation	<ul style="list-style-type: none"> <li>• Unemployment increased from 0% to 16% (1990)</li> <li>• Hyperinflation over 1180% (1989)</li> <li>• Employment rate of 51% (2003)</li> <li>• Increasing poverty</li> </ul>
1997	The Great Polish Flood	<ul style="list-style-type: none"> <li>• 56 people died</li> <li>• Material loss – \$3 500 000 000</li> </ul>
2010	Central European flood	<ul style="list-style-type: none"> <li>• 37 people died</li> <li>• Material loss - \$2 500 000 000</li> </ul>

Table 2. Major stressors encountered by Poles. Based on Ambroch et al. (2018).

After the WWII had ended, war survivors re-entered the world and began the long process of rebuilding their lives which was challenging due to the repressions during the Stalinist regime. The vast majority of Polish citizens were at risk of being prosecuted, and were therefore unable to talk about their suffering and losses. It might have translated to a lack of social acknowledgement of the war trauma and societal disapproval which enhanced PTSD syndromes (Lis-Turlejska et al., 2018). Moreover, little attention has been paid to PTSD in Polish medicine and psychology, and the lack of awareness of the condition among the population contributed to difficulties in recognising and coping with the condition (Lis-Turlejska et al., 2018). Importantly, no psychological help is available to them until this day (Schäfer et al., 2018).

Another important issue that Polish people faced after the war was poverty. In the period of state socialism, poverty was very common and increased over time from 20% in 1960's (Tymowski, 1973) to 30% in 1980's (Frackiewicz, 1993). That is, prior to the socio-economic transformation Poland already faced a serious poverty problem which was only worsened by the later changes. Poverty at that time was closely linked with family disfunctions such as serious sickness, abuse or alcoholism, and with dramatic incidents that disorganised incomes. People with very low incomes struggled with substandard housing, a lack of resourcefulness in searching for help from institutions and low level of education and pathological phenomena (Frackiewicz, 1993).

There were a number of aspects related to the transformation in Poland such as: a lack of perceived stability and social security, worries about becoming unemployed which influenced mental and physical health of Poles (Smolen, 2006). According to Czapiński (1993), mental health of Poles became highly dependent on their financial resources, age, marital status and education, which are the factors associated with increased risk of lifetime PTSD (Koenen et al., 2017). The "New Poverty" originated with the socio-economic transformation in 1989. The opening of markets to international competition caused massive unemployment, a considerable drop in income and therefore consumption, the cutting of the state social benefits and high inflation rates that reached 1183% in 1989 (Smolen, 2006). After the fall of communism the rate of poverty doubled (Smolen, 2006).

Since the collapse of communism, Poland has faced various natural disasters such as floods in 1997, 2001, 2009, 2010. The Great Polish Flood in 1997, which had the most severe consequences, affected much territory of Poland, destroying over 650 000 hectares of the land, 680 000 flats and over 40 000 people lost everything they owned (Zielinski et al., 1999). In fact, it is one of the traumatic events that has been a subject to psychological research in Poland (Strelau & Zawadzki, 2005). However, other traumatic events such as the Smolensk air disaster due to which number of

politicians including the president, ministers and the military chiefs of staff died, have not been researched.

Currently, there is no coherent care system for trauma survivors in Poland (Schäfer et al., 2018). There are several non-governmental organisations working with mostly domestic violence victims (e.g. abused children), but they are underfunded and their capacity is limited (Schäfer et al., 2018). Furthermore, an access to professionals funded by the national healthcare is very limited and individuals seeking help are often forced to pay for their psychotherapy (Schäfer et al., 2018). The biggest bottleneck is in the provision of psychologists specialised in PTSD, since the number of them is very low and they usually work in major cities (Schäfer et al., 2018). That is, people living in small towns and rural areas, who are unable to pay for their travel and treatment, may never receive any help, which given the number of traumatised individuals in Poland, is alarming.

#### 3.3.1.1.1. **Shattered existence**

Trauma means literally a wound and the question arises what is it that is wounded when one experiences trauma (Vachon et al., 2016). It can have detrimental effects on one's health (biology), self-esteem (psychology), and social functioning (sociology), and frameworks of meaning (Thompson et al., 2017). Trauma can heavily affect one's sense of meaning, purpose and direction (Thompson et al., 2017). That is, trauma relates to a strong sense of losing the compass, which can produce an overwhelming sense of meaninglessness (Thompson et al., 2017). Surviving trauma is like waking up in a world that does not make sense anymore, as Greening (1990) described it:

What happens when we are traumatized? In addition to the physical, neurological and emotional trauma, we experience a fundamental assault on our right to live, on our personal sense of worth, and further, on our sense that the world (including people) basically supports human life. Our relationship with existence itself is shattered. Existence in this sense includes all the meaning structures that tell us we are a valued and viable part of the fabric of life.

There has been a growing interest in narrative approaches in the area of trauma (Odachowska et al., 2019). The story gives value, and marks the hierarchy of events in the past, present, and imagined future (Odachowska et al., 2019). Creating the story makes aversive events more understandable because they are given a function, place, and the meaning. The next section of this chapter focuses on the importance of narrative in the process of knowing who we are, what has happened to us, and how we will continue our existence.

### 3.3.2. **Narrative**

Narrative is a strategy of living. It is a universal activity practiced by humans which organises human experience. That is, narrative allows people to organise their stories, which goes beyond sequencing of events and goes towards meaning making by linking events, perceptions and experiences (Martin,

2008). It fills the space between what happened and what it means. That is, narrative structures experience and gives it meaning.

According to Heidegger (1962), existence occurs through the past, present and future. The understanding is in the past, the self is in the present by dealing with daily life, and it is in the future by projecting oneself onto its future possibilities (Zimmerman, 1981). In other words, the possibilities obtained in the past are being acted in the present in order to achieve something in the future (Guignon, 1993). The present is a fundamental aspect of biography. The past is embodied as a memory and forms the situated context, that is, the way one perceives the world (Merleau-Ponty, 1962). In this sense, time is not quantifiable; it is not made up of series of “nows”. It lifts the self to the level of temporal transcendence (Zimmerman, 1981 p.28). To be a transcendent being means to have the freedom to change one’s position by, drawing upon the future to establish a present that differs from the past (Weiss, 1999).

It is important to note, that there is a distinction between the “objective reality” and “narrative truth”, the first being the factual account and the second being a constructed account of the experience (Spence, 1982). One first of all exists and defines oneself afterwards (Heidegger, 1962, p. 117). That is, a human is a being that exists before can be defined by any conception of it (Sartre, 1948, p. 27). One is who one makes of oneself (Sartre, 1948). The self is brought into being through choices we make on who we want to be and how we want to live (Hatab, 1999). The ontological a-priori status of this approach means that it must make a resolute commitment to something that gives its life a defining context (Guignon, 2004).

Heidegger claimed that the self is located, rather than in the mind, in the “happening” of life (Guignon, 2004). That is, the identity can only be grasped in terms of one’s life story (Guignon 1998, p.568),

The fact that my life presents itself as a relatively coherent story connecting past accomplishments and projections into the future is what first makes it possible for me to experience, and to attribute to myself, something like personal identity.

Identity, rather than being something one is born with, is something one creates. There is a notion that self and identity are key features of illness narratives. For instance, Bury (1982) framed chronic illness as a biographical disruption.

### **3.3.3. Biographical disruption**

The word biography is often defined in terms of the history of one’s life written by someone else, while disruption relates to a disturbance or problem that interrupts, causes confusion or impedes progress of something or an event. These two words combined in the context of falls, mean that falls

interrupt, impede and at times stop the progress of an older person's life. Injuries can disrupt routine and daily life (Leske, 1998). Nearly 33% of elderly report functional decline after falling (Yoshida, 2007). Falls are also the largest single cause of restricted activity among older adults accounting for nearly 20% of restricted activity days (Rubenstein, 2006), which then increase the possibility for long-term institutionalisation. Thus, falls can disrupt biography.

According to Bury (1982), there are three elements of biographical disruption. First, illness disrupts taken for granted assumptions and behaviours. That is, while most of the time we are unaware of the functioning of our body, illness brings our bodily state to the forefront of consciousness. Second, illness disrupts our explanatory frameworks, leading us to rethink our biography. Individuals question their sense of self and their future. Third, illness disrupts the way we deploy our resources: physically in terms of time and effort, socially in terms of the activities we pursue, and financially.

#### **3.3.3.1.1. Fall-related physical limitations as a biographical disruption**

Functional impairment brings into focus the subject of mobility as an extension of existence which results in a perceptual habit through which one participates in the world (Sartre, 1956). The changes relate to emotional, physical and financial burdens, consequently disrupting their biographies. Physical limitations disrupt the routine of older adults. Fall-related impairment in physical function affects an older adult's taken-for-granted existence. That is, their usual activities such as toileting, dressing or showering. This kind of existence impacts an older adult's wellbeing, which can result in emotional distress, anxiety and depression (Legters, 2002; Lin et al., 2015).

Another aspect related to physical limitations an older person faces after injurious falls, is changes in family dynamics. A need to take care of an injured relative can place some burden on relatives, consequently collectively disrupting their biographies. That is, falls recovery disrupts support mechanisms of the family structure and causes the older person and the family to re-examine their future. This may be particularly evident in Poland, where care for the elderly is seen as a family responsibility. Around 80% of all caretakers in Poland are family members (Golinowska et al., 2014). Nearly 20% of the low-level local administration units do not provide elderly people with any home care services despite having the obligation to do so (Kouvonen, 2018). Thus, the combination of limited support from the state and the expectations of older adults to be taken care of by their families, may relate to much disruption in relatives' biographies.

#### **3.3.3.2. The Life Thread Model**

Ellis-Hill and colleagues (2008) developed a model which reflects the psychological and social processes related to identity change associated with transition following a sudden and dramatic life change. In the design of the model, the authors recognised the importance of incorporating narrative

approaches in rehabilitation processes. The model is therefore unique, since it applies abstract concepts of narrative and social reality to the area of rehabilitation.

The model emphasises the importance of striving to recreate a sense of self and identity through the development of a life thread symbol. It involves weaving together different stories and memories of one's life into a coherent overarching self-narrative. The thread represents one's life with past memories represented at one end, and one's future plans at the other end. The thread helps to create past and future life by generating a sense of identity, situation and future possibilities. Identity and sense of self are not set in stone, but are constantly re-created as life proceeds.

The Life Thread Model (Ellis-Hill et al., 2008) assumes that the life story constitutes of many life threads or stories (Figure 5). Some of them can be present through the entire life course, while some of them are discontinued. They help to create a past and future life, generating a sense of one's identity, situation and future possibilities.

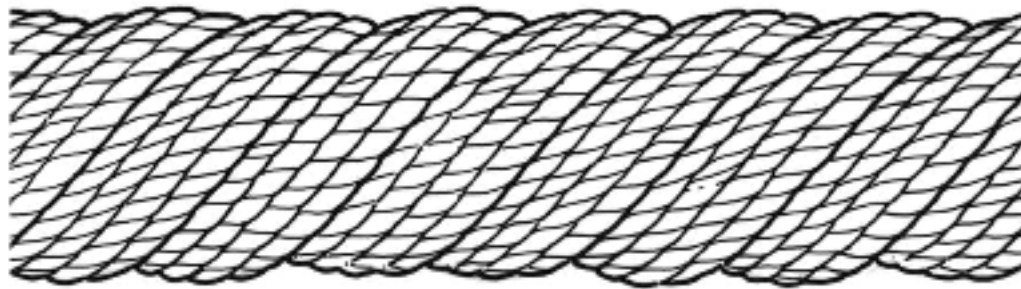


Figure 5. Complete life thread (Ellis-Hill et al., 2008).

The Life Thread Model assumes that identity is not fixed but constantly re-created. That is, stories are created between people (Ellis-Hill et al., 2008). Figure 6 shows the social aspect of stories. Ellis-Hill et al. (2008) explained that the thread looping down to meet the central thread might correspond to a patient who work with healthcare professionals for a short period of time, with shared goals and plans which then they leave, never to meet again. Stories people tell are influenced by other people, forming parallel threads. For instance, people with disabilities are perceived as being brave, rather than being ordinary people making their way in the world (Ellis-Hill et al., 2008).

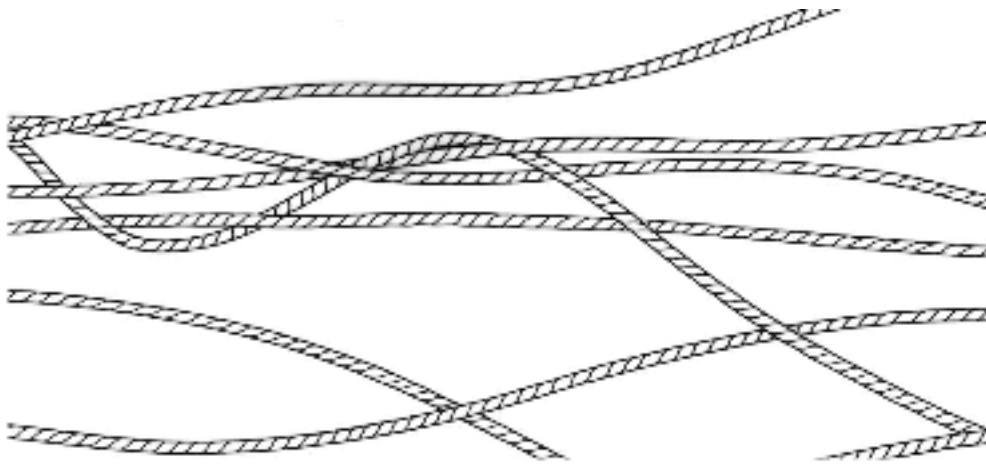


Figure 6. Parallel life threads (Ellis-Hill et al., 2008).

Life-changing events such as a severe injury can alter one's identity, and move them from a world that they were once familiar with to a new and unfamiliar world. Life threads establish continuity between past and future; hence, they contribute to a sense of coherence. When one is faced with recovery, one restores some life threads and replaces others (Ellis-Hill et al., 2008). Figure 7 shows many broken threads which means that the continuity is lost and therefore future is no longer predictable.

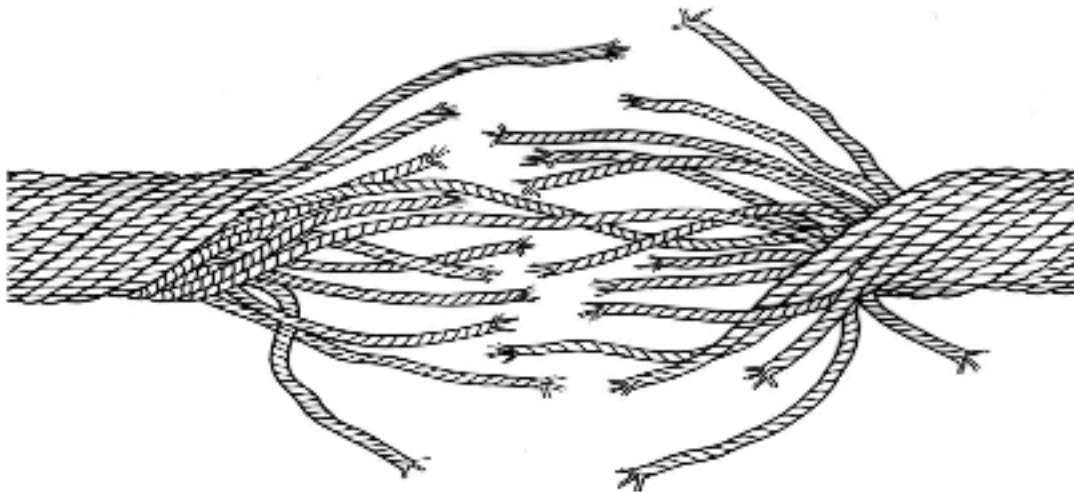


Figure 7. Life threads unravelled (Ellis-Hill et al., 2008).

Older adults after unexpected, potentially life-threatening accidents are known to experience physical but also psychological difficulties (Grossman et al., 2000). It may challenge one's assumptions and beliefs about the world and the self (Janoff-Bulman, 1989). The lack of congruence in the patient's eyes can create a sense of meaninglessness (Horowitz, 1980, Thompson & Janigian, 1988).



The Life Thread Model implies that rehabilitation is not purely focused on physical recovery, but rather other processes, namely psychological and social, are involved (Ellis-Hill et al., 2008). A recovering patient actively tries to make sense of what happened. The process of rehabilitation belongs to the patient who is an expert in the process, not a victim (Ellis-Hill et al., 2008).

The Life Thread Model was developed for people with stroke but it is easily applicable to any lifechanging condition. When such situation occurs, some of the threads are cut, some remain connected, and therefore some need cauterising, whilst it may be possible to tie others back together. The model has been previously applied to the area of stroke (Ellis-Hill, 2001; Ellis-Hill, Payne, & Ward, 2000; Ellis-Hill et al., 2019), spinal cord injury (Kavanagh, 2012), and traumatic brain injury (Whiffin et al., 2019).

The Life Thread Model (Ellis-Hill et al., 2008) suggests that continuity is essential for wellbeing but injury can displace continuity as the future becomes disconnected from the past and present. Life threads enable patients to see themselves as compromised of a number of different stories (Ellis-Hill et al., 2008). In the presence of injury, some threads are discontinued and need to be tied off. However, it is important to find some ways to reconnect these threads and consequently increase the patient's positive sense of self. The next section of the chapter therefore discusses strategies to successful ageing and adapting to the constraints and losses of late life by optimising favourable outcomes for the self.

### **3.3.3.3. Successful ageing**

Successful ageing does not start in old age, but denotes a process that encompasses the entire lifespan (Freund, 2008). "Old age" does not start at a certain point and it is not instantly defined as "successful" or "unsuccessful" (Freund & Riediger, 2003). The concept of successful ageing has prompted debates over how to define success (Bülow & Söderqvist, 2014; Katz & Calasanti, 2015; Martin et al., 2015). Some models of successful ageing stress the importance of physical function (Rowe & Kahn, 1997), while other models emphasize the importance of subjective wellbeing (Hsu & Jones, 2012). Although subjective wellbeing is related to physical health, it is questionable whether they are adequate determinants of successful ageing. There are older adults who show high levels of wellbeing despite low physical function (Zammit et al., 2014). Such individuals give rise to a question what defines successful ageing.

Strong claims have been made by several scholars (Baltes & Baltes, 1990; Birren & Schroets, 1996) that objective criterion of successful ageing is not adequate, but rather successful ageing ought to be associated with adaptivity and the potential for dealing with a variety of demands. It has been postulated that process models should play a more central role in successful ageing research (Rowe

& Kahn, 2015). Martinson & Berridge (2015) called for researchers to pay more attention to older people's own perspective on ageing. One such framework is Selection, Optimisation and Compensation (SOC, Baltes & Baltes, 1990). The model posits that these three fundamental processes of developmental regulation are essential for successful ageing (Freund, 2002). SOC is a model of successful ageing which focuses not on outcomes, but on doing the best one can with what one has (Baltes & Carstensen, 1996).

#### 3.3.3.3.1. **SOC**

SOC was developed by Margaret and Paul Baltes and their colleagues in order to conceptualise lifespan processes of adaptive development (Baltes, 1997). According to lifespan psychology, development compromises developmental trajectories of growth (gains) and decline (losses). Resources relate to personal and environmental characteristics that support people's interaction with their environment (Freund, 2002). They include psychological (e.g. self-efficacy), social-cultural (e.g. economic system) and biological characteristics (e.g. activity level). People's resources are finite and people need to make choices about the allocation of these limited resources (Baltes, 1997).

There are age-related changes that occur in the availability of resources (Freund, 2002). Balance between gains and losses shifts over the adult life course to a less desirable ratio (Heckhausen & Baltes, 1991). People face increasing levels of losses in later life (Brandtstädter, 2006). In order to continue functioning, older adults need to apply protective processes to preserve a sense of continuity, efficacy and personal worth despite losses and constraints (Brandtstädter, 2006). Thus, in old age, people need to allocate more of their resources to the maintenance of functioning and providing resilience against losses.

SOC is constructed around two concepts. The first one is goal choice which is selection. The second concept relates to the means for achieving goals which is represented by optimisation and compensation strategies (Baltes & Baltes, 1990). In the SOC model perspective, successful ageing is defined by selection of functional domains, optimising developmental potential and compensating for losses in order to ensure the maintenance of functioning and minimisation of losses (Freund, 2002).

##### 3.3.3.3.1.1. **Selection**

Selection promotes successful ageing (Freund, 2002). Selection is critical to behavioural and developmental processes (Marsiske et al., 1995). Without selection of activities, people would not know where to direct their resources. Selection is a necessary precondition for achieving higher levels of functioning (Baltes & Baltes, 1990). The essential nature of selection is the assumption that development, which is constrained by time and resources, has always a specific set of goals

(Baltes & Carstensen, 1996). Goals are defined as “desired states that people seek to obtain, maintain or avoid” (Emmons, 1996). The number of options usually exceed the resources available to a person (Freund, 2002). Thus, it is vital to wisely select the goal and allocate the resources in order to achieve it (Freund, 2002). Successful goal selection relates to the development of goals for which resources are available, and that match one’s needs and environmental demands (Freund, 2002). Both elective and loss-based selections imply the structuring and continuing reorganisation of goals (Freund & Baltes, 2000).

Elective selection refers to choices being made based on selection of goals rather than losses. This is a process of selecting from a pool of alternative developmental pathways in order to achieve higher levels of functioning (Freund & Baltes, 1998). It involves developing, choosing and committing oneself to goals. For instance, an older man may choose to retire so that he can pursue another goal to travel.

SOC is a dynamic model which includes an ongoing assessment of one’s choices (Marsiske et al., 1995). Older adults do not evaluate their current goals from a “younger” frame, but the current frame shaped over the life course (Brandtstädter, 2006). When previous choices no longer provide the anticipated benefit, or when the cost of a choice is greater than expected, new goals need to be chosen. That is, loss-based selection is a response to the loss of previously available resources that are necessary to maintain functioning (Freund, 2002). Loss-based selection refers to the situation in which one is pressured to make changes in the goals because of a loss of some goal-relevant mean (e.g. loss of money). It encompasses processes such as searching new goals or reconstruction of one’s goal hierarchy (Freund & Baltes, 1998). It allows people to focus and redirect their efforts when resources used to the maintenance of functioning or as a substitute for functional loss are unavailable or relocated to more promising goals (Freund, 2002).

#### 3.3.3.3.1.2. **Optimisation**

Optimisation is the hallmark of any traditional conception of development (Baltes, 1997). It addresses the path toward achieving selected goals. This means the allocation or refinement of resources as a means of achieving goals. Optimisation is linked to behavioural plasticity and one’s ability to modify the environment to create desired outcomes and to meet challenges being experienced (Coleman & O’Hanlon, 2017).

Optimisation strategies can be understood at psychological, physical and social levels (Coleman & O’Hanlon, 2017). An example within the psychological sector would be a person with memory complaints who gets help with a masked depression which may underline the issue. An example of optimisation from the physical sector would be an overweight person who exercises and keeps a diet

in order to improve their health state. An example of optimisation from the social field would be a person who struggles with maintaining functional autonomy and asks for help from a spouse in order to maintain the autonomy.

#### 3.3.3.3.1.3. **Compensation**

Compensation is often conceptualised as integrated with optimisation. Some scholars distinguish between the processes in terms of growth and decline. Freund and Baltes postulated “whereas optimisation is motivated by consideration of processes related to growth, compensation addresses the aspect of losses and decline” (2000, p. 49). The authors provided an example of a practicing phonetic articulation. For a child it may relate to optimising the goal of developing language skills, while for an older adult it may be related to compensating for neurological challenges to counteract loss from a stroke (Freund & Baltes, 2000).

Compensation relates to strategies applied when an individual’s means are no longer sufficient to maintain certain levels of functioning when faced with losses (Baltes, 1997). People address their challenges by taking counter-steps so that any potential impairment is lessened (Coleman & O’Hanlon, 2017). Loss-based selection is one way of regulating losses, which relates to the restructuring of a person’s goal system. However, replacing the goal may sometimes be impossible or undesirable. The goal may be central to one’s wellbeing and therefore not easily abandoned in the face of losses. In this case, one may wish to acquire or redirect unused resources for alternative means of pursuing goals, which refers to compensation (Freund & Baltes, 2000).

#### 3.3.3.3.2. **SOC and self-efficacy**

According to Bandura (1986), self-efficacy regulates the relationship between beliefs and behaviour since self-efficacy influences people’s judgements of their capabilities to succeed in certain situation or accomplish a task. It determines how much effort people will expend in their action and how persistent their efforts will be (Bandura, 1989). When individuals successfully perform some tasks, their feelings of self-efficacy increase. On the other hand, when people fail, their self-efficacy decreases. Consequently, they are more likely to avoid the activity in the future (Bandura, 1989).

Self-efficacy is believed to affect the optimisation process (Freund & Baltes, 2000). People’s perception on how much they can control outcomes of the goals they selected affect optimisation. Goals help organise people’s behaviour over time and across situations. In old age, focusing on growth, rather than losses, is particularly important since it relates to positive regulative functions (Freund, 2002). Trying to achieve growth-oriented goals is associated with a higher degree of self-efficacy and leads to positive emotions and increased wellbeing (Freund & Baltes, 2000). Goal commitment contributes to feeling that a person had a purpose in life (Freund, 2002).

#### **3.3.3.4. SOC and falls**

The SOC model is considered over others since it has been shown to address improvement, maintenance and reorientation in terms of coping with major life changes (Boerner & Jopp, 2007). It is a broad theory which can be applied to explain a diverse range of conditions where adaptive processes are needed to address physiological and psychological deficits. An overview of SOC studies suggested potential for the use of the framework in health programmes to enable older adults to maintain independent functioning and quality of life (Grove et al., 2009).

There is a vast amount of evidence suggesting that SOC strategies are related to various indicants of successful development. SOC has been reported to be positively associated with wellbeing, life satisfaction and quality of life (Freund, 2008; Kahana et al., 2012). SOC has been found to be particularly helpful for low-resource older adults in their efforts to maximise their wellbeing (Freund, 2008). That is, successful ageing may coexist with poor physical functioning if adaptive strategies are utilised (Young et al., 2009). A literature review by Zhang & Radhakrishnan (2018) supports the role of SOC in enabling healthy and meaningful lives among older adults with chronic conditions.

SOC has been examined in a range of situations. Many of the studies focused on ageing, examining the evidence for SOC within older adults in general (Carmichael et al., 2015; Haase et al., 2013; Lien et al., 2015), and in specific circumstances such as driving (Nasvadi & Vavrik, 2007; Pickard et al., 2009), and physical activity (Evers et al., 2012; Son et al., 2009). The model has been examined within individuals with a range of health conditions such as general chronic illness (Rozario et al., 2011), arthritis (Gignac et al., 2002), and stroke (Donnellan et al., 2012).

In the rehabilitation settings, planning has been found to be beneficial for the translation of intentions into behaviour (Scholz et al., 2007). An action planning intervention on hip fracture patients engagement in activities of daily living showed that participants in the intervention group were more likely to perform the activities than those in the control group (Orbell & Sheeran, 2000). For older adults undergoing orthopaedic rehabilitation, SOC was a mediator between self-efficacy in recovery efforts and goal accomplishment (Ziegelmann & Lippke, 2007).

Since SOC strategies are utilised to achieve maximal possible functioning, they may be applied by older adults in order to cope with fall-related obstacles. Up to date, there has been only one attempt to apply the SOC framework to the area of falls. Laybourne et al. (2008) applied the SOC model in rather unconventional way by categorising people who join fall prevention programmes, according to the strategies they applied. That is, people who utilised the process of selection, were classified as “selectors”, optimisation “optimisers” and compensation “compensators”. According to the

classification, selectors are people who believe that the reduction of abilities when faced with a loss is a good way to cope with the risk of falling. The risk becomes greater in their eyes after joining the intervention programme. Optimisers are people who willingly engage in interventions in order to enrich their functioning and ultimately increase physical activity and social participation. Compensators are people who want to compensate for deficits in their functioning.

The distinction proposed by Laybourne et al. (2008) seems problematic. It does not predict people who are both selectors and compensators. That is, people who believe the reduction of activity is a good option but still want to compensate for some of their shortcomings in functioning. The problem arises from the misinterpretation of the nature of the SOC model in which there is a dynamic interplay of the processes of selection, optimisation and compensation. Moreover, although the model specifies each of the individual processes, Paul Baltes emphasised the need for adoption of a holistic view on SOC (Freund, 2008). That is, the classification Laybourne et al. (2008) proposed is virtually impossible due to the interrelation of these processes.

#### **3.3.4. Summary**

Despite a high prevalence of exposure to trauma, not everyone goes on to develop PTSD (Hiller et al., 2016; White et al., 2015). Across the main theoretical models for understanding the development and maintenance of PTSD is the centrality of classical conditioning. One of the most significant implications of the new DSM-5 relates to the fact that it undermines the centrality of fear in PTSD, thus the present thesis applies the previous classification, DSM-IV. Several theoretical approaches to PTSD were presented, which incorporated the concept of fear. Since an event does not stand alone as an isolated object, it needs to be placed within the lifespan perspective. Thus, the Life Thread Model (Ellis-Hill et al., 2008) was introduced as a means to understand the meaning of falls in someone's life. The model suggests that continuity is essential for wellbeing but injury can displace continuity as the future becomes disconnected from the past and present. The Selection, Optimisation and Compensation model was presented as a way of coping with the injury and distribution in continuity it is related to. The chapter concludes with the previous application of the SOC model to the area of falls.

## **4. Methodology**

### **4.1. Introduction**

Methodological features that pertain to all the subsequent empirical work to follow are described in the present chapter. This chapter begins with the objectives of the study. Then it discusses the merits of qualitative and quantitative research and presents mixed methods as an approach chosen for this study. This study applied the convergent parallel design since both qualitative and quantitative data were collected concurrently. Pragmatism was chosen as a way of merging the two approaches. The chapter then moves on to describing the quantitative phase of the study. The settings, recruitment and instruments are presented. The section then concludes with the analytic strategy planned for the survey study. The section on the qualitative phase starts with a description of narrative approaches and the reasons for choosing narrative inquiry. Next, the recruitment and settings are discussed. The process of designing the interviews is presented. The section then ends with presenting an approach to the analysis of the qualitative data. The chapter concludes with ethical considerations.

### **4.2. Research aim and objectives**

Since the publication of the classic article on “post-fall syndrome” by Murphy and Isaacs’ (1982), much attention has been devoted to FoF, FE and fall-related anxiety among older adults. The problem of falls has been researched in the context of disorders such as depression (Eggermont et al., 2012; Hellström et al., 2009; Hull et al., 2013; Iaboni & Flint, 2012; Jacob et al., 2019; Kvelde et al., 2015; Kwan et al., 2012; Launay et al., 2013; Painter et al., 2012; Whooley et al., 1999). However, post-fall PTSD received rather scant attention, even though depression and PTSD tend to co-occur (Ikin et al., 2010), and depression is a risk factor for PTSD development (Chang et al., 2017). Previous research on post-fall PTSD (Bloch et al., 2014; Chung et al., 2009; Eckert et al., 2019; Jayasinghe et al., 2014; Kornfield et al., 2017) provided rather mixed results on PTSD prevalence and factors associated with PTSD development. Thus, the aim of this thesis was to explore the problem of post-fall PTSD among older adults who required hospitalisation due to fall-related injuries. The study had two broad objectives:

- 1) To explore aspects related to post-fall PTSD development among older adults.
- 2) To explore the influence of fall-related trauma on older people’s recovery and life.

Previous studies did not investigate the influence of PTSD on fallers’ recovery and life; therefore, this study is exploratory in nature. It does not intend to provide final and conclusive evidence of the problem, but to provide new information to allow for a better understanding of the problem and form basis for future research (Singh, 2007). Appropriate research design was required to achieve the objectives of this thesis. Consequently, mixed methods approach was chosen.

### **4.3. Mixed methods**

During the course of the twentieth century there was an emergence of a methodological divide between qualitative and quantitative approaches (Layder, 1988). Quantitative research relates to deductive approaches to the research (Leavy, 2017). It can be regarded as an objective research design which is based on measurable, factual, and observable data. It involves measuring variables and testing relationships to prove, disprove or lend credence to existing theories (Leavy, 2017). According to Leavy (2017), this approach is most suitable for the research aiming to explain and evaluate.

Qualitative research relates to inductive approaches aiming at generating meaning (Leavy, 2014). In this approach, it is believed that human experience is too complex to be reduced to numbers. It is an approach that values experience and seeks ways to study its richness and complexity and it is not focused on predicting and generalising (Denzin & Lincoln, 2003). It aims to explore social phenomena, meanings ascribed to activities, situations, events; or to build a depth of understanding about some dimension of social life (Leavy, 2014). According to Leavy (2017), this approach is most suitable for the research aiming to explore, explain or describe.

In the metaphorical comparison of the two approaches proposed by Marks & Yardley (2004), quantitative research can be seen as a map, which is a very good guideline but is unable to provide readers with an understanding of what it is like to be at that place. This is where qualitative research is useful because it is like a video which allows to see not only the vivid details but also constantly changing perspective of the observer. Thus, merging the approaches will result in a more comprehensive picture of post-fall trauma.

Mixed methods, which is called the “third methodological movement” (Teddlie & Tashakkori, 2012), is a relatively new research approach with the beginnings dating back to the late 1980s (Creswell & Plano Clark, 2007). It emerged as an answer to the complexity of research problems which required an approach beyond what quantitative or qualitative research could provide alone. A combination of both approaches offers the most complete analysis of social phenomena (Creswell & Plano Clark, 2007).



According to Greene (2007, p. 20) mixed methods research,

actively invites us to participate in dialogue about multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished.

#### **4.3.1. Paradigms**

It has been extensively debated whether combining qualitative and quantitative approaches is even possible (Guba & Lincoln, 1989). When mixing qualitative and quantitative methods, researchers are faced with philosophical challenges of reconciling methods that are traditionally espouse opposing ontological (the nature of reality) and epistemological (how we gain knowledge of what exists) positions (Morgan, 2007). That is, the mixed methods approach embraces multiple philosophical paradigms and ways of making sense of the world (Greene, 2007).

Quantitative approaches are rooted in positivism and postpositivism. Positivists argue that there is a reality out there to be studied, captured and understood, while postpositivists believe that reality can only be approximated, but never fully apprehended (Guba & Lincoln, 1989). Postpositivists are ontological realists. They accept the existence of an independent reality but doubt it can be known in a direct way (Given, 2008). Postpositivism applies various methods in order to capture as much of reality as possible (Teddle & Tashakkori, 2012).

Qualitative approaches are related to the interpretivist paradigm which rejects the idea that there is one objective version of reality (Braun & Clarke, 2013; McEvoy & Richards, 2006). In this approach, things are studied in their natural settings and researchers try to make sense, interpret phenomena in terms of the meanings people bring to them (Trumbull, 2005). The aim of the research is therefore to understand how people make sense of the world and how they experience events (Braun & Clarke, 2013; Willig, 2013). Generalisability is not a meaningful goal of the research. Rather, the aim is to understand and interpret phenomena within its context (Braun & Clarke, 2013).

Some researchers argue that there may be no better or no worse than any other method, since they just tell a different kind of story (Teddle & Tashakkori, 2012). On the other hand, some qualitative researchers reject positivist and postpositivist worldviews for producing a certain kind of science, silencing too many voices, while positivists and postpositivists argue that what they do is good science free from subjectivity and consider qualitative approaches as unreliable and not objective (Teddle & Tashakkori, 2012). Both approaches are concerned with the individual's point of view, but qualitative researchers believe they can get closer to one's perspective by detailed interviewing and observations which result in rich and valuable descriptions of the social world, while

quantitative researchers are unconcerned with such descriptions since it can interrupt the process of developing generalisations (Teddlie & Tashakkori, 2012).

#### **4.3.1.1. Pragmatism**

Since the emergence of mixed methods research, much attention has been paid to the compatibility of the two approaches. In this “paradigm war” (Denzin, 2010, p. 420), Denzin called for a “new paradigm dialog” that transcends paradigms, methodologies and epistemologies, and therefore honours collaboration among the scholars. As a response to that call, Teddlie & Tashakkori (2012) presented the case of paradigm pluralism which denotes the adoption of a variety of paradigms as the philosophical foundation for a study. It assumes that a variety of paradigms may serve as an underlying philosophy for using mixed methods approach. Furthermore, Creswell and Plano Clark (2007) argued that multiple paradigms can be utilised in mixed methods designs and that worldview can change during the study to match different phases of the project. That is, especially when both types of data are collected in the same phase of the project, then an all-encompassing worldview would be best (Creswell & Plano Clark, 2007).

Pragmatism is described as practical or “what works” approach (Creswell & Plano Clark, 2007). Pragmatism is a deliberate choice for researchers who practise pluralistic orientation towards paradigms focused on the importance of the research question and multimethod data approach (Creswell & Plano Clark, 2007). Pragmatists accept multiple realities and are oriented towards solving practical problems (Creswell & Plano Clark, 2007). They “focus on the outcomes of action” (Morgan, 2014, p. 28) suggesting that whichever theories are useful in a particular context are thereby valid. Thus, there is much flexibility in addressing a range of research questions related to pragmatism.

#### **4.3.2. The use of mixed methods in the current study**

After conducting the literature review presented in chapter 2, it became evident that little was known about factors associated post-fall PTSD. While informative, since it provided the evidence for the existence of PTSD symptoms among fallers, the results did not explain why some people develop PTSD. Furthermore, none of the studies explored the impact of PTSD on fallers’ lives. Thus, it became apparent that the rich data had to be collected to capture the meaning of falls in older people’s lives. There was a notable lack of qualitative studies in the area, however, using a mixed methods design for this study was chosen for three reasons. First, merging both methods allows for the research aims to be addressed more completely. According to Creswell and Plano Clark (2007) both approaches can allow the limitations of one method to be offset by the strengths of the other. As discussed previously, qualitative methods are often criticised for being subjective and lacking generalisability, and quantitative methods are argued to be insensitive to the participants’ voices

(Teddle & Tashakkori, 2012). In this study, merging both approaches gave the opportunity for the voices being heard alongside with the questionnaire results, which was aimed to provide meaningful interpretation of the results through the data integration process. Second, since previous studies (Bloch et al., 2014; Chung et al., 2009; Eckert et al., 2019; Jayasinghe et al., 2014; Kornfield et al., 2017) provided a rather unclear picture of post-fall trauma development, this study aimed to provide a robust picture of older people's experiences of falls and fall-related trauma. Furthermore, other aspects, which were not predetermined by the previous studies, may also relate to post-fall trauma, therefore the qualitative exploration not only allowed for further explanation and understanding into the quantitative findings, but also identified other aspects that may relate to the trauma. Third, no previous study has investigated the impact of post-fall PTSD on older adults, which was assessed both qualitatively and quantitatively in this study to provide a deeper understanding of it. The merging of both approaches allows for new knowledge to be created through the process of data integration, which is unique to mixed methods and provide the basis for future research (McKim, 2015).

#### **4.3.2.1. Research design**

A design typology lists and classifies options for arranging the elements of a study (Bazeley, 2018). The most widely cited design typology is that of Creswell and Plano Clark (2007). It includes three main typologies – the convergent parallel design, the exploratory sequential design and the explanatory sequential design. In the convergent parallel design, qualitative and quantitative data strands are given equal status, are collected concurrently and interpreted jointly. In the exploratory sequential design, qualitative data are collected to inform the development of a following quantitative phase. In the explanatory sequential design, quantitative data are analysed, and the followed up with a qualitative phase.

This study applied the convergent parallel design which was chosen as the best fit for this study for several reasons. Both qualitative and quantitative data to be collected concurrently due to logistical and time constraints. They were of equal priority. They were analysed independently before being combined for interpretation. The goal was to obtain different yet complementary information addressing post-fall trauma to provide a richer source of information that either one could by itself. Maruyama and Ryan (2014) claimed that although in some ways they are separate studies, a goal was to merge the two sources of information to produce single interpretation.

In this study, the initial quantitative approach examined whether certain pre-determined factors, based on the literature review, related to post-fall PTSD. It also explored how the presence of trauma symptoms related to fall-related self-efficacy; and whether it related to the changed in self-concept. Furthermore, it investigated how fall-related trauma might influence the strategies that people employ in order to cope with their recovery. This was then followed by a qualitative component that

explored what other aspects may relate to post-fall PTSD. Importantly, it aimed to explore how fall-related trauma might affect older people’s recovery and lives. Initially, one interview with each participant was planned. However, during pilot semi-structured interviews, which were aimed at testing the interview guide as well as my interviewing skills, I became quickly aware that conducting interviews at hospital would be highly problematic since no data would be collected on the transition from hospital settings to the “regular life” of participants, neglecting the impact of falls on seniors’ lives. A follow-up interview was decided to explore whether fall-related trauma might still influence fallers’ lives even after the physical recovery is finished. Figure 8 presents a flow diagram showing the stages of the study.

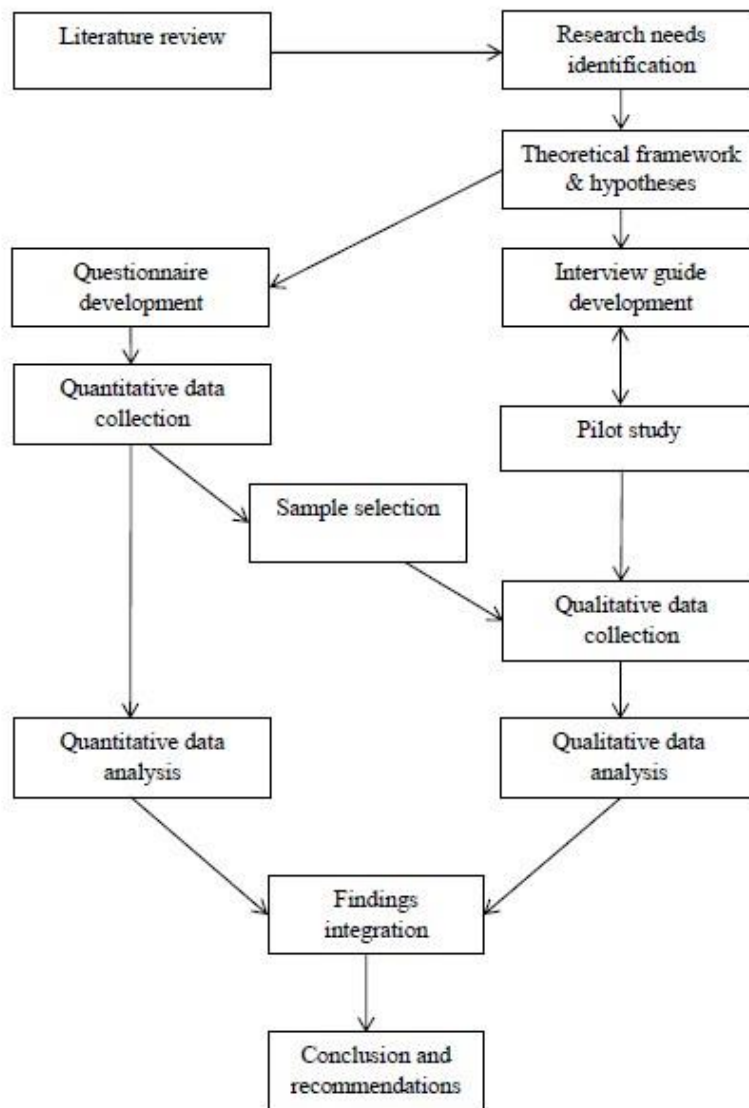


Figure 8. Stages of the present study.

Creswell and Plano Clark (2007) argued that use of pragmatism is well matched for a convergent parallel design as it provides an “umbrella” paradigm, which is appropriate in the process of merging the two sources of information. This fitted well with my own pragmatic view about the need to use the most appropriate methodology to address the aims of the research. The convergent parallel design allows for flexibility in organising data collection and time to complete the data analysis. Focusing purely on quantitative data collection was not feasible. Due to practicalities and the fact that the data collection took part abroad in a limited amount of time, quantitative and qualitative data were collected at the same time. The sampling strategy for the qualitative study involved selecting patients based on the questionnaire responses. Furthermore, in order to obtain a large sample for the quantitative study, the quantitative data collection continued even during conducting follow-up interviews when no more patients were anticipated to be selected for the qualitative study due to time constraints. Table 3 presents how pragmatism as a worldview was used in this study. It also illustrated how a convergent parallel mixed methods design was applied to this research.

Pragmatism		Use of one worldview - pragmatism focuses on the aim of the research and what works to best address the research aims.
Convergent parallel mixed methods	Strand	Quantitative data – questionnaires delivered during the entire process of data collection. Qualitative data – two semi-structured interviews- one post-discharge and one at least six months later (after physical recovery would have ended).
	Level of interaction	Both approaches were implemented independently – data collection and analysis were kept separate until the integration process.
	Priority	Equal priority to both approaches.
	Timing	Qualitative and quantitative data co-occurred, yet the qualitative data collection ended before the quantitative data collection did. Thus, qualitative data were analysed first.
	Mixing	Merging the data occurred after the collection and analysis of both data ended.

Table 3. The convergent parallel mixed methods design.

#### **4.3.2.2. Challenges in mixed methods**

A major challenge posed by mixed methods research is the researcher having insufficient skills in each method to produce meaningful results (Teddlie & Tashakkori, 2012). There is much doubt expressed by scholars about researchers being incompetent at conducting both qualitative and quantitative research which may potentially result in “qualitatively light” research (Denzin & Lincoln, 2008). Bliss (2008) suggested that adopting a team approach to developing and analysing research help ensure competency. It allows for sharing research expertise from both approaches to ensure high quality of the research. In this research, supervision involved researchers from both qualitative and quantitative background. Having started with predominantly quantitative experience, supervision by researchers with a qualitative background was of much value in developing my qualitative research skills. Also, there were challenges in terms of the time constraints of the data collection process and planning the follow-up interviews since the data were collected abroad.

#### **4.3.2.3. Quantitative study**

##### **4.3.2.3.1. Settings**

The recruitment for the study took place at three general hospitals in the Greater Poland Voivodeship. Poland constitutes of 16 voivodeships and the Greater Poland Voivodeship is the second biggest and third most populated voivodeship in Poland, where around 19% of the population are aged 65+, similarly to the rest of the country (20%; Stanczak & Znajewska, 2017). In 2010 Poland had higher rates of fall-related deaths (7.6 per 100 000 inhabitants) compared to the European Union countries where the number was considerably lower (5.3 per 100 000 inhabitants; Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny, 2018). Moreover, the highest fall-related death rate was in the Greater Poland Voivodeship (12.4 per 100 000 inhabitants) where falls pose a greater risk for life than traffic accidents (Narodowy Instytut Zdrowia Publicznego – Państwowy Zakład Higieny, 2018). Furthermore, approximately 23% of people 65+ report falling, while in the Greater Poland Voivodeship the number is higher (24.9%) and compared to other voivodeships - one of the highest in Poland (Urząd Marszałkowski Województwa Kujawsko-Pomorskiego, 2018).

Participants were patients of orthopaedic wards at Regional Hospital im. Ludwika Perzyny in Kalisz, The Team of Health Care in Ostrów Wielkopolski and The Medical Center in Pleszew and one outpatient clinic which is a part of The Medical Center in Pleszew. Ethical approval was obtained from Bournemouth University Research Board (Appendix 2). The study was registered via Komisja Bioetyczna (Eng. Bioethical Board, Appendix 3). Necessary permissions to conduct the research were granted from Regional Hospital im. Ludwika Perzyny in Kalisz (Appendix 4), The Team of

Health Care in Ostrów Wielkopolski (Appendix 5) and The Medical Center in Pleszew (Appendix 6).

#### 4.3.2.3.2. **Inclusion criteria**

All patients were approached providing they satisfied the following criteria: 1) age 60 years old or older, 2) hospitalised due to fall-related injuries, 3) injuries were either fractures, back injury or head trauma, 4) the fall occurred within 6 months prior to the study, 5) no cognitive impairment as indicated by the hospital staff based on the medical documentation available to them.

#### 4.3.2.3.3. **Recruitment**

Each orthopaedic ward and the outpatient clinic were visited at least once a week to recruit as many participants as possible, given time constrains. Typically, patients with fracture injuries are discharged within three to five days, therefore the orthopaedic wards were aimed to be visited two times a week. The outpatient clinic was open only once a week, yet it provided a large number of patients at the same time. However, they constituted a very diverse group and only limited number of them met the inclusion criteria.

Upon arrival at a site, the researcher made an initial contact with a head nurse who had a full access to patients' medical history and selected patients potentially eligible for the study, who were then approached and given an information sheet which described the study (Appendix 7a – in English, Appendix 7b – in Polish). The information sheet provided details about the nature of the research, in particular, it explained what participation involved and any issues they needed to take into consideration before volunteering to take part in the research. Patients were assured their information was confidential and anonymous, and they had the right to disengage themselves from the study at any time without penalty. Participants interested in the study completed a consent form (Appendix 8a – in English, Appendix 8b – in Polish). There was an option to provide their contact details if interested in taking part in further research. Participants were then given the questionnaire (Appendix 9a – in English, Appendix 9b – in Polish) and if they were unable to fill it in due to e.g. upper limb fractures, they were read the questions out loud and selected desired answers verbally. At the end of the study participants were given a debrief form (Appendix 10a – in English, Appendix 10b – in Polish) which included the researcher's contact details should they have any more questions about the study.

#### 4.3.2.3.4. **Instruments**

Since the survey was planned to be administered at hospital, one of the principles of designing the questionnaire was to keep it as short as possible, so it would require the minimum effort from participants. For this reason, some measurements initially considered were not included in the survey

in order to minimise research burden related to the duration of the study as well as any distress potentially associated with some questions. For instance, anxiety assessment was excluded since PTSD assessment allowed for capturing anxiety (Simms et al., 2002; Sumner et al., 2019; Zoellner et al., 2014).

The first part of the questionnaire focused on the demographics of participants: age, gender, number of health problems and previous falls. The next section involved fall-related questions such as falls location, time since falling, whether they were able to get up without help and the injury they experienced.

#### 4.3.2.3.4.1. **Falls-efficacy, fear of falling and falls attribution**

FE was assessed with the Short Falls Efficacy Scale – International version (FES-I; Kempen et al., 2008). The tool constitutes of seven questions about participants' concern about falling when engaging in various tasks of daily living such self-care, domestic, physical and social activities. Each question is measured on a four-point Likert scale, where 1 relates to “not concerned” and 4 refers to “very concerned”. Scores between 7-8 indicate low fall-related concern, 9-13 refer to moderate concern and scores above 14 relate to high concern (Kim Delbaere, Close, Mikolaizak, et al., 2010). FoF was assessed with a one item tool asking whether the participant is afraid of falling. Falls attribution assessment involved three questions from McKee, Orbell, & Radley (1999) research identifying the attributions people make about their falls were selected for the questionnaire. The questions examined the participant's main belief about why they fell, whether they could have prevented themselves from falling and whether the reason why they fell would cause them falling again. The responses were measured on a seven-point Likert scale.

#### 4.3.2.3.4.2. **Posttraumatic stress disorder**

Posttraumatic stress disorder was assessed with PTSD Checklist – Civilian Version (PCL; Weathers et al., 1991). This is a 17-item questionnaire designed to assess symptomology, enabling diagnosis and indication of symptoms severity. PCL is particularly informative because it is closely based on the DSM-IV symptoms criteria for PTSD. For instance, the B1 criterion “recurrent and intrusive distressing recollections of the event, including images, thoughts or perceptions” corresponds to “repeated disturbing memories, thoughts, or images of a stressful experience” of the PCL. The PCL was adjusted for the purposes of assessing falls. That is, instead of asking a generic question about a traumatic event, people were asked specifically about their last fall. Respondents rated each item from 1 (“not at all”) to 5 (“extremely”) to indicate the degree to which they have been bothered by that particular symptom. Thus, total possible scores range from 17 to 85. Responses between 3-5 for each item were treated as “symptomatic”. PTSD occurrence was indicated when individuals gave at least one symptomatic response to B cluster, three to C cluster and 2 to D cluster. However, given



that the study was conducted among recent fallers, the time criterion was not envisaged to be fulfilled by the majority of individuals. Therefore, an umbrella term of “PTSD symptomology” is used throughout the thesis, since the sample was anticipated to include both individuals who met full criteria of PTSD diagnosis as well as participants with acute PTSD symptoms.

#### 4.3.2.3.4.3. **Self-concept**

Self-concept was assessed with semantic differential methodology. Using this technique, Tyerman and Humphrey (1984) created the Head Injury Semantic Differential Scale which comprises 20 bipolar rating scales ending in adjectives selected for their adjudged relevance to head injury. This measure focuses on perception of personal attributes with scores ranging from 20 to 140, where higher scores indicate a more positive self-concept. Although, head injury and falls are different concepts, it may be expected that self-concept will be changed as people experience a differing relationship with their bodies and the environment around them. Three timeframes were selected: the past (before the fall), present and future (within a year). There were three total scores generated: past versus present, past versus future and present versus future.

#### 4.3.2.3.4.4. **Selection, Optimization, and Compensation**

Selection, optimisation and compensation model was assessed with the Short Version of the SOC Questionnaire (Baltes et al., 1995). It assesses aspects of elective and loss-based selection, optimisation and compensation. Each item consists of two statements: one reflects the target process of life management (A) and the other relates to non-SOC strategy (B). The alternatives allow for more variance because SOC strategies are generally judged as more desirable. Participants were asked to decide which of the statements, A or B, describes them better. The number of affirmative responses to the SOC behaviours represented the score. Alternative responses received no score (Baltes et al., 1995).

#### 4.3.2.3.4.5. **Instruments translation**

At the time of designing the questionnaire, none of the tools were available in the Polish language. For instance, the PCL (Weathers et al., 1991) was only recently translated (Ogińska-Bulik et al., 2018), while other tools such as the Short Version of the SOC Questionnaire (Baltes et al., 1995) and the Head Injury Semantic Differential Scale (Tyerman and Humphrey, 1984) have not been translated until this day. Thus, the scales needed to be translated. It is important to establish the equivalence of measures when translating a questionnaire from one language to another to ensure the applicability of the instrument to a given language group. I used my understanding of Polish and English to ensure that the translation did not alter the meaning and that the constructs had similar meanings in Polish and English. To ensure that the meaning was not distorted during the translation, I invited an expert with a good understanding of both languages to back-translate the scales to the

original English language. When discrepancies were discovered, they were discussed with the expert and agreements were reached.

#### 4.3.2.3.5. Study hypotheses

The first research objective was to explore aspects related to post-fall PTSD development among older adults. Previous studies (Bloch et al., 2014; Chung et al., 2009; Eckert et al., 2019; Jayasinghe et al., 2014; Kornfield et al., 2017) presented a very unclear picture of factors associated with post-fall PTSD development. Thus, this study aimed to quantitatively assess the variables investigated in the previous studies. Table 4 presents the first six hypotheses of this study and how they related to previous research.

Study hypothesis	Support from the literature	Lack of support from the literature
1. Age is associated with PTSD presence.	Chung et al. (2009) found that older age at baseline correlated with PTSD.	Eckert et al. (2019) found no association between age and PTSD. Bloch et al. (2014) and Kornfield et al. (2017) reported that PTSD associated with younger age.
2. Female gender is associated with PTSD presence.	Chung et al. (2009) and Jayasinghe et al. (2014) reported significant correlations between PTSD and female gender.	Bloch et al. (2014) and Eckert et al. (2019) did not find any associations between gender and PTSD.
3. Falls history is associated with PTSD presence.	Bloch et al. (2014) and Chung et al. (2009) found falls history to be related to PTSD.	Eckert et al. (2019) did not report significant correlations between falls history and PTSD.
4. Number of health problems is associated with PTSD.	Chung et al. (2009) and Jayasinghe et al. (2014) reported that health problems and PTSD were associated.	Bloch et al. (2014) did not find any associations between PTSD and health problems.
5. The length of time waiting for help is uncorrelated with PTSD.	Chung et al. (2009) found no association between the assistance with rising up and PTSD diagnosis. Jayasinghe et al. (2014) found no correlation between the length of time spent on the ground waiting for help and PTSD.	Bloch et al. (2014) found that the ability to get up from the ground unassisted was a significant predictor of PTSD.
6. PTSD scores vary across different injury types.	Eckert et al. (2019) found posttraumatic stress symptoms to be quite prevalent among individuals with hip fractures. Jayasinghe et al., (2014) reported higher PTSD scores among back injury patients.	Kornfield et al. (2017) did not find PTSD to be a problem among hip fracture patients.

Table 4. Study hypotheses and the evidence for their inconclusiveness from previous research.

The second objective of the study related to the exploration of how post-fall trauma may impact older peoples' life. Data from the self-concept scales were analysed to test the following null hypotheses:

7. There is no difference between past and present self-concept scores.
8. There is no difference between past and future self-concept scores.

Data from the SOC scale were analysed to test the following null hypotheses:

9. There is no difference in the SOC strategies application between people with PTSD and without PTSD symptomology.
10. There is no difference in the elective-based strategies application between people with PTSD and without PTSD symptomology.
11. There is no difference in the loss-based strategies application between people with PTSD and without PTSD symptomology.
12. There is no difference in the optimisation strategies application between people with PTSD and without PTSD symptomology.
13. There is no difference in the compensatory strategies application between people with PTSD and without PTSD symptomology.

Furthermore, path analyses were performed to investigate the impact of falls on fall-related self-efficacy. Two hypothetical models were proposed. They are discussed in detail later in the chapter.

#### 4.3.2.3.6. **Analysis of survey data**

The data analysis included descriptive statistics of the data, data screening, bivariate correlations, pairwise comparisons and path analyses. The details of the analyses and the statistical techniques utilised to analysed the data are described in the following section. Descriptive statistics, data screening, pairwise comparisons and bivariate correlations were carried out using the SPSS statistical software program (version 26.0). AMOS (version 26.0) was used to conduct path analyses.

As preliminary analysis, descriptive statistics (means and standard deviations, or frequencies and percentages, as appropriate) were calculated for each variable for the entire sample. Next, data screening for outliers, normality, multicollinearity, independent errors and homoscedasticity were performed to assure that the data were suitable for further analyses.

A series of bivariate correlations were then performed between PTSD and demographic and falls characteristics to determine what factors may be associated with susceptibility to PTSD. Another set of bivariate correlations were conducted to explore the relationships between FE and PTSD factors, FoF and falls beliefs. An independent one-way ANOVA was performed to determine

whether there were significant differences in PTSD severity between participants with different injury types (upper limb injury, lower limb injury, back injury, head trauma, hip fracture).

In order to assess self-concept following falls, a series of pairwise comparisons were performed for each item of the scale, as well as total scores for each time frame:

- Between the past and the present
- Between the past and the future

Due to the number of tests, in order to avoid Type I error, the probability level was set at  $p < 0.001$ .

In order to assess the application of SOC strategies, a series of pairwise comparisons were performed to assess potential differences in SOC application between people with and without PTSD symptomology for:

- The overall SOC score
- Elective-based selection
- Loss-based selection
- Optimisation
- Compensation

The final stage of the analyses involved performing path analyses to explore the relationships between factors that may influence FE. The next section describes the approach to the analysis and the development of the hypothesised models.

#### 4.3.2.3.6.1. **Path analyses**

Path analysis is a technique pioneered by Sewall Wright in 1934 who found it to be a powerful tool in the field of phylogenetics (Halli & Rao, 1992). It is an extension of the regression model modelling and it examines the web relationships among variables. Since it is based on correlations, they do not show causality (Todman & Dugard, 2007). The role of path analysis in causal model developments is in the interpretation and the decomposition of a dependent variable rather than discovering causes.

Path analysis can help researchers understand complex relationships and determine the most significant relationships within a larger network of variables. It enables for graphical representations of relationships among variables that concisely and visually summarise those relationships. It allows for examination of not only the direct impact of a predictor on a dependent variable but also for exploration of other types of relationships such as indirect and spurious relationships. Moreover, the

strength of these relationships can be measured. It indicates how well the hypothesised model fits the data (Lleras, 2005).

The reason for conducting path analyses was to examine the associations between falls-efficacy and other fall-related constructs, and how the presence of PTSD symptoms might influence them. Chapter 2 discussed the study conducted by Delbaere et al. (2010), who demonstrated that older adults' perceived falls-efficacy affects their functioning, despite their physiological status. That is, FE appears to be an important factor to consider in recovering older adults. Thus, FE was a central factor in the analyses. FE is a crucial construct in the models since it reveals if a person believes he or she is able to participate in specific activities without falling (Tinetti et al., 1994). For the current study, two models were constructed. The first model was based on the Multifactorial Causation Model of Falls and Fear proposed by Hadjistavropoulos et al. (2011). The second model extended Model I with the addition of PTSD symptoms and more nuanced relationships between the constructs.

#### **4.3.2.3.6.1.1. PTSD clusters**

In PTSD fear and anxiety play central roles (Jovanovic et al., 2013; Zoellner et al., 2014). PTSD involves a host of symptoms: reexperiencing, avoidance, and hyperarousal. Sumner et al. (2019) conceptualised PTSD in terms of two compromising dimensions of fear and dysphoria. Fear refers to the response to present threat (Blanchard & Blanchard, 2008). Dysphoria on the other hand, relates to non-specific symptoms of general distress commonly found in other mood and anxiety disorders (Armour et al., 2016). It highly correlates with anxiety and depressive symptoms (Simms et al., 2002). Network analysis of PTSD indicates that fear might be the key element of PTSD, while dysphoria is rather a secondary response which emerges over time (Bryant et al., 2017). Rademaker et al. (2012) found that arousal, intrusions and avoidance were superior to the dysphoria factor. Moreover, Foa and Kozak (1986) nominated the inability to suppress fear in safe conditions to be the key pathological process in PTSD. Thus, the present study applies the above distinction to the models. Thus, fear and dysphoria clusters proposed by Sumner et al. (2019) were chosen for the models.

#### **4.3.2.3.6.1.2. Model I**

Hadjistavropoulos et al. (2011) emphasised the fact that the Multifactorial Causation Model of Falls and Fear is only aimed to explain the role of FoF and FE and it is not a global model of fall prediction. Thus, for the purpose of the present study, only the main variables of the model were considered: FoF, falls beliefs (repeatability), falls history (number of falls including the last fall) and anxiety represented with the dysphoria factor of PTSD.

According to Hadjistavropoulos et al. (2011), FoF is affected by history of falls and fall-related beliefs. In this study, history of falls relates to number of previous falls, since all participants were fallers. Fall-related beliefs relate to repeatability which is one's perception on whether their falls are repeatable due to the same cause (McKee, Orbell, & Radley, 1999). Repeatability is considered in terms of one's perception on the cause of the problem as stable-unstable (Hinman, 1998) and therefore its potential to cause future falls. According to Hadjistavropoulos et al. (2011), FoF and anxiety affect FE, but FoF and anxiety are treated rather as a cluster in which no relationship between the two concepts is predicted. Thus, in Model I no path is hypothesised between the constructs (Figure 9).

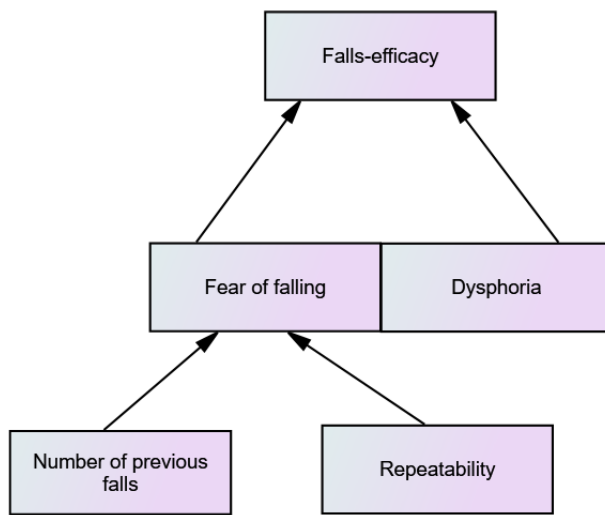


Figure 9. Hypothesised Model I.

#### 4.3.2.3.6.1.3. Model II

Hadjistavropoulos et al. (2011) assumed that one may be always fearful towards a specific situation, action, event, but one would only experience anxiety while performing, preparing to perform or remembering performing the action. That is, the two constructs are not assumed to co-occur at the same time. It may imply that different forms of FE may exist – one that is affected by FoF, i.e. when one is always concerned about performing fall-related activities without falling; and one that is influenced by anxiety, i.e. when one is actually performing the activity. The problem of the fear and anxiety distinction proposed by Hadjistavropoulos et al. (2011) was discussed in Chapter 2, and even though the distinction may not be accurate, the premise remains – FE may have different facets depending on what influences it.

Model II (Figure 10) therefore was constructed around the assumption that FE may be multidimensional. Fear factor was incorporated into the model in order to expand on the

relationships proposed in Model I. Since the research on associations between FoF and falls history has provided mixed results (Allali et al., 2017; Basaran et al., 2016; Clemson et al., 2015; Palagyi et al., 2016; Pohl et al., 2015), the factor was removed from the model.

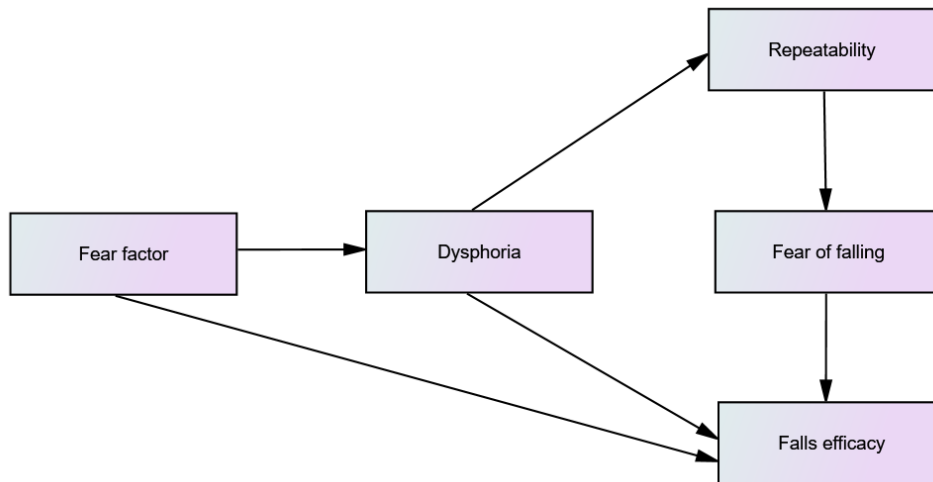


Figure 10. Hypothesised Model II.

The model predicts three pathways that are related to FE:

1. Direct relationship between the fear factor and FE – “at the moment falls-efficacy”. After injurious falls, there seems to be some reactivity towards multiple triggers such as environmental or situational factors (e.g. weather, noise, particular places) that are associated with a feeling of threat which gives a rise to fear. Symptoms of re-experiencing and hyperarousal can make someone fearful when faced with a present threat resulting in maladaptive responses since one feels incapable of performing activities at the very moment.
2. Direct relationship between dysphoria and FE – “constant falls-efficacy”. Dysphoria results as secondary responses that emerge over time (Bryant et al., 2017). It is fuelled by the fear factor, in particular, by hyperarousal which is considered the “engine” that drives other symptoms (Solomon et al., 2009). In that path, dysphoria which develops over time as a result of falling, makes someone constantly worrying about being incapable of ever performing potential activities.
3. Indirect relationship between PTSD factors and FE via repeatability and FoF – “elaborated falls-efficacy”. Repeated fear experiences relate to eliciting dysphoria over time. The emotional distress affects the way one perceives the stability of the cause of their falling. One views their FoF in terms of their perception on the stability of the cause of their fall in a given context. Depending on the perception, one feels more or less fearful and

consequently capable or incapable of performing the activity. Unlike the previous paths that are more likely to result in negative outcomes, this path may result in more positive outcomes, i.e. successfully performing the activity without falling and distress.

Hadjistavropoulos et al. (2011) claimed that one can only express fear towards potential threat or one can be anxious towards specific threats, that is, only one emotion can be experienced at a time. Model II proposes three hypothesised pathways to FE but it does not assume that only one path can be “active” at a time. Instead, one can be more prominent than others at certain times. Presumably, traumatised individuals may be more likely to show the first two hypothesised paths due to the presence of PTSD symptoms.

#### **4.3.2.3.6.1.4. Model fit**

The essential question in path analysis is whether the hypothesised model fits the data. There are various statistical techniques to evaluate model fit, and the usability of model fit indices appears flexible (Fan et al., 2016). Generally, the more fit indices utilised in the research, the more likely that a poorly fitting model will be rejected, hence a combination of at least two fit indices should be used (Hu & Bentler, 1999). This study applied model fit indices commonly chosen by researchers (Schreiber et al., 2006).

- 1) The chi-square test is a conventional null hypothesis significance (Barrett, 2007). A significant chi-square indicates a lack of satisfactory model fit. Thus, a good model fit provides an insignificant result at a 0.05 threshold (Barrett, 2007). However, since chi-square statistic is a statistical significance test, it is sensitive to sample size (Hooper et al., 2008). When large samples are used (generally over 200), it tends to reject the model and when small samples are used (generally over 100), it lack power and it may not discriminate between good fitting models and poor fitting models (Kenny & McCoach, 2003).
- 2) Ratio of chi-square/df minimises the impact of sample size on chi-square test (Wheaton et al., 1977). Values under 2 are considered acceptable (Tabachnick & Fidell, 2007).
- 3) Root mean square error of approximation (RMSEA) is a population based-index and consequently insensitive to sample size (Byrne, 1998). It is considered as one of the most informative fit indices (Diamantopoulos & Siguaw, 2000). Various cut-off points have been proposed over the years. Up until nineties, values over 0.10 indicated poor fit (MacCallum et al., 1996). More recently, Steiger (2007) proposed a cut-off point of 0.07 and it appears to be the general consensus among authorities in the area (Hooper et al., 2008).
- 4) Comparative Fit Index (CFI) is an incremental fit index used to compare the hypothesised model to the null model with no predictors (Kline, 1998). It takes into account sample size and performs well even with a small sample size (Tabachnick & Fidell, 2007). CFI is



considered “goodness-of-fit” indices where larger values indicate better fit. Values of 0.95 or greater for CFI indicate good fit (Hu & Bentler, 1999).

- 5) The Tucker-Lewis Index (TLI) compares a hypothesised model against a null model (Schumacker & Lomax, 2016). It is relatively independent of sample size, yet it is preferable for relatively smaller samples (<1000; Rigdon & Hoyle, 1997). TLI yields values ranging from 0 to 1, with values close to 0.95 being indicative of good fit (Hu & Bentler, 1999). A TLI of 0.95 suggests that the model of interest improves the fit by 95% relative to the null model.

#### **4.3.2.4. Qualitative study**

The adoption of qualitative research offers much advantage in relation to this project. In line with the purpose of this research, a qualitative approach provides an opportunity to explore why falls can be traumatic and how fall-related trauma may influence fallers’ recovery and lives. A qualitative approach has the capacity to provide a wealth of information about subjective lived experience of older adults with regard to their falls placed in their life context in order to provide a deep understanding of the phenomena. Consequently, it was decided to undertake the narrative approach.

##### **4.3.2.4.1. Narrative**

People are natural storytellers. Stories are vehicles through which we talk about our world, lives and selves (Esin, 2011). We use stories to understand what goes on in our lives (Cortazzi, 1993). “To narrate” derives from *narrare* - “telling” and *gnarus* - “knowing in some particular way” (Bruner, 2002). Narrative research takes as a premise that people live and understand their lives in storied forms with a clear sequential order that connects events in a meaningful way (Sarbin, 1986). Sequence is necessary for narrative since it always responds to the question “And then what happened?” (Esin, 2011). It fills the space between what happened and what it means. That is, narrative structures experience and gives it meaning. Mattingly and Garro (2000, p.1) stated that “narrative mediates between an inner world of thought-feeling and an outer world of observable actions and states of affairs”.

Approaches in narrative analysis differ on the core questions of “why” and “how” the stories are constructed and told (Esin, 2011). According to Gubrium and Holstein (1997) there are two key epistemological approaches to narrative analysis: the naturalist and the constructivist approaches. They are both concerned primarily with narrators’ everyday lives and experiences, but the first approach seeks rich descriptions of people as they exist and unfold their natural habitats, while the latter focuses on “how a sense of social order is created through talk and interaction”. That is, interviews can be a resource or the interview itself can be a topic for an enquiry. Another difference between the two relates to the perception on the social world. The naturalist approach assumes that

the social world is an external reality available to be observed and described by the researcher, while the constructivists view it as constantly “in the making” and focus on the production of it. The focus on the study was on the content of the interviews and the central questions were the “what” questions – “what experiences have people had?”, “what is happening?”, “what does it mean to storytellers?” therefore the approach to the study aligned with the naturalist view.

The narrative approach was chosen since it is a natural approach to research because people are storytellers (Cortazzi, 1993). It allows people to tell their stories, to talk about their experiences in their own words which enables the researcher to understand participants’ lived experience through their narratives. A narrative inquiry is not concerned with generalisability of the findings but with obtaining data that facilitates the understanding of meaning (Riessman, 2008). There was a need to explore the meaning older adults ascribe to their falls to understand why some falls can be traumatic. Furthermore, falls taken out of the lifetime context may not be fully understood, therefore they were researched in the lifetime perspective to obtain that meaning, to see who the participants are, their previous experiences and how they may relate to their interpretation of falls, recovery and future lives.

#### 4.3.2.4.2. **Recruitment**

The qualitative study participants were the participants who took part in the quantitative study. During the quantitative study, participants were asked if they were interested in taking part in further research. They were given an option to provide their contact details on the consent form if they wanted to be contacted in the future regarding future studies. They were also verbally informed on the nature of the research and what their participation would involve. Participants were given the participant information sheet (Appendix 11a – English, Appendix 11b – Polish), and were asked to complete the consent form before each interview (Appendix 12a – English, Appendix 12b – Polish).

Participants were selected on the basis of their questionnaire responses. That is, participants who were recognised as having PTSD symptomology based on the DSM-IV symptoms criteria for PTSD, as well as participants who did not meet the criteria for PTSD symptomology were offered further participation in the study. Such sampling strategy was utilised in order to capture a variety of experiences and the presence of the symptoms was assessed with a questionnaire.

#### 4.3.2.4.3. **Settings**

This study involved interviewing each participant twice – soon after their discharge from hospital and at least six month later, when their physical recovery was most likely to be ended. It is a common practice among narrative researchers to interview each participant multiple times to capture any changes in their narratives (Esin, 2011). The interviews were planned to be conducted at home since

some people may not feel comfortable talking about their lives at hospital while other patients and hospital staff were around. Furthermore, I hoped to see their home environment and family dynamics in order to get more understanding of how falls might have influenced not only the person, but also their surroundings. I believed that it could be particularly useful at the follow-up to see any changes in the surroundings that might have occurred since the first interview. Thus, extensive fieldnotes were taken after the interview.

#### 4.3.2.4.4. **Pilot stage**

The interview guide was developed and tested in the pilot stage to ensure the clarity of the questions. It was developed to access narratives of participants lives before they had a fall, the fall itself, their hospital stay, coping strategies, plans for the recovery, as well as any other plans for their future (Appendix 13a – in English, Appendix 13b – in Polish). As an unskilled interviewer, I prepared various questions which could potentially help me move forward the interview.

The pilot interviews were conducted at Regional Hospital im. Ludwika Perzyny in Kalisz. Two fall patients were interviewed. From the pilot study I found that many questions were unnecessary and made it hard to navigate through the interview schedule. Furthermore, I realised that people, even in pain caused by their injuries, are keen on sharing their stories and there was no need for excessive questions which may potentially interrupt their stories. Thus, my approach to the interviewing changed since the pilot stage of the study. The interview guide became shorter and more concise (Appendix 14a – English, Appendix 14b – Polish). However, I still included various prompt questions for participants who might struggle with telling their stories.

#### 4.3.2.4.5. **Interviews**

Participants were encouraged to tell their stories and the questions often started with “Tell me about”. The aim of the interview was to elicit narratives and concrete descriptions of individuals’ lived experiences (Holloway & Jefferson, 2000). The aim was for individuals to view the interviews as descriptions of their lives, rather than discussion on falls and fall recovery *per se*. Thus, the questions were designed to allow respondents to focus on the aspects of life which they found most meaningful. The biographical interviews were not seen as providing facts about participants’ lives, but rather their interpretations and representations of their lives (Kvale & Brinkmann, 2009).

Their stories were not interrupted and next questions were asked when the interviewees indicated that they finished their story. In the moments of long silence, participants were encouraged to continue by rephrasing the last thing they talked about. Furthermore, if interviewees become tearful, they were given time to calm down. Participants were allowed to speak for as long as they liked, also about the subjects not covered in the interview guide. Interviews included no explicit questions

about the SOC strategies. After the interview finished, time was spent with them and questions were asked about how they felt during the interview and whether they enjoyed the experience.

#### 4.3.2.4.5.1. **Post-discharge interviews**

The interview guide was limited to four broad areas:

- The past of participants since their childhood.
- Their falls - why and how they fell, their hospital stay and returning home.
- Recovery - whether they already started it, plans for the recovery, any challenges related to it.
- Plans for the future.

Each section involved several questions in case participants asked for some more specific questions.

The interview guide is included in Appendix 4.11a – in English, Appendix 4.11b – in Polish.

#### 4.3.2.4.5.2. **Post-physical recovery interviews**

During the pilot interviews it became apparent that a follow up interview may be needed to capture a wider range of fall-related experiences such as the transition from the hospital settings to home, any limitations such as immobility or dependence on others. This interview guide involved three broad sections:

- The past - at the beginning of the interview, they were asked about their past since their discharge from hospital. It created some overlap with the first interview which also helped them placing the last interview in time.
- The present – their health state, daily life, social networks.
- How their present compared with their past – whether there was anything that might have changed compared to their lives before their injury.

#### 4.3.2.4.5.3. **Transcription**

Each recording was transcribed right after the interview. The transcription included:

- An introduction with my own description of the settings of the interview including surroundings of a participant, family members or other individuals present and whether they communicated with me. It was based on my fieldnotes.
- Pauses, hesitations, false starts and silences.
- Non-word vocalisations such as “uhm”, “ah”, laughter.
- Punctuations were included to mark the end of a sentence which was not determined by the grammar rules, but by the pauses produced.

- The text was parsed into clauses determined by the punctuations, i.e. each line of the text corresponded to one sentence.
- Interruptions – either caused by a participant (e.g. phone calls), or a family member (e.g. joining the interview); they included my comments on the nature of the interruption and whether I was asked to pause the recorder.

#### 4.3.2.4.6. **Approach to the analysis**

Thematic analysis was chosen as the preferred method for analysing the data. The aim of the analysis was to explore how fall might have affected older people's lives. Thematic analysis is a flexible tool which can be applied across a range of theoretical and epistemological approaches (Bryman, 2012). It is a method for detecting, analysing and reporting patterns in the data (Braun & Clarke, 2013). Thematic analysis allows for both inductive and deductive approaches (Fereday & Muir-Cochrane, 2006).

The model of conducting thematic analysis described by Riessman (2008) was adopted in this study. This model focuses on the content of a narrative, on “what” is said rather than the aspects of “telling” (Riessman, 2008. p.54). It is a flexible tool which can be applied to a wide range of narrative texts (Esin, 2011). Furthermore, it is particularly useful for analysing narratives of different research participants (Esin, 2011). It was particularly important for this study since older adults constitute a diverse group and falls might differentiate them even more in areas such as the context of falling, fall-related injuries, being mobile or immobile, dependent or independent.

##### 4.3.2.4.6.1. **Analysis of the interview data**

Each participant was aimed to be interviewed at two different time points. Each interview was transcribed and analysed as soon as it was conducted. That is, the interviews were initially analysed separately. Complying with the model of thematic analysis (Riessman, 2008), the manuscript was read through several times. All the relevant sections of the transcript were marked and commented on. A section was considered relevant when it was related to personal or fall-related aspects. Next, the themes were identified across the selected sections to create thematic categories which were given broad names. The aim was to work with many subtle categories that retain the richness of the narrative. Separate sentences of sections were assigned to relevant categories. In this way, different parts of narratives were grouped under the defined thematic categories.

The themes identified from the first interview were then compared with the themes identified in the follow-up interview. The themes were marked according to their preservation – themes that were discontinued before the fall, themes discontinued after the fall, preserved themes and themes that emerged after the fall. It was done for each participant separately. Analysing each person's interview

separately allowed for more familiarity with that person, their way of speaking and whether it changed over time. Next, the themes were compared across other participants. Common and different thematic elements were aimed to be explored. However, since a large number of themes were generated, the two broad categories from the first stage of thematic analysis were kept. That is, themes were broadly categorised as “personal life stories” and “fall stories”. At that stage of the analysis, it was impossible to explore other aspects which were revealed in the interviews. Thus, the focus was limited to these two aspects which were closely related to the research aims.

Fall stories about recovery were analysed using the SOC conceptualisation. Stories about elective selection related to selection of personal goals in order to match a person’s needs and motives with the available resources in order to achieve better functioning. Stories about loss-based selection included a change in goals or the goal system, such as reconstructing goals hierarchy to focus on the most important achievable goals; or replacing goals that were no longer achievable. Optimisation was coded when efforts to augment or enrich one’s capacities in order to continue functioning were present. Stories about compensation included the use of alternative means to pursue goals or maintain functioning in the context of resource loss.

The research approach was tested in the pilot study. Two transcripts from the pilot study were read by the supervisory team and the themes identified were compared. Many similar themes were identified. However, some aspects were a subject for further debates, mainly due to cultural and linguistic differences. It related to the fact that I analysed the data in the original language, while my supervisors received transcripts translated to English. The act of translation is not related to just translating the words but also their meanings. Some words are hardly equivalent such as English “friend” and Polish “przyjaciel”. Furthermore, language affects our emotions and some words can appear free from emotions. One example of that is “syneczek” (“dear-little-son”). Since English does not have such diminutives, a “loveless” word “son” is used, thus the meaning of the word is consequently different. There also words which do not translate to English such as “żal” which is often translated as grief or sadness but it relates to sadness in very specific circumstances, with connotations of disappointment or betrayal. Another word with very strong connotations is “kombinowanie” which does not translate to any other language and is related to the history of Poland. It became particularly popular during the Soviet time when only a small group of people were able to purchase common everyday objects due to unavailability of many products (Bebłot, 2018). “Kombinowanie” refers to alternative ways of finding solutions, including obtaining products and services. Thus, in order to preserve such meanings, the data in this study were analysed in the Polish language.

#### **4.3.2.5. Merging the data**

Integration is an essential stage in the mixed methods process (Teddlie & Tashakkori, 2006). Merging the data typically occurs at the end of a mixed methods study (Watkins & Gioia, 2015). The way the data is integrated influences how researchers generate answers to the research questions and develop inferences from the data. It involves bringing the qualitative and quantitative data together and comparing them (Watkins & Gioia, 2015). The data generated by the two approaches were integrated after each data were analysed separately. That is, the data integration occurred at the point of theoretical interpretation. It relates to interpretative integration where an explanation is generated from qualitative and quantitative data, blending it into a coherent account (Moran-Ellis et al., 2006). Contradictions, divergences and convergences in the findings produced by each analysis were reconciled at the point of interpretation and explanation.

#### **4.4. Ethical issues**

At the beginning of the research, participants were informed who has access to the data and how the information would be stored. Participants were asked to provide their phone number if they wanted to be contacted by the researcher in order to arrange interviews. If they did not want to participate in the interview studies, they did not need to provide any contact details. The personal information was stored securely and protected from intrusion; the information was explicit to the participants.

Confidentiality is an agreement about what will be done with participants' data. Narrative research creates an issue related to privacy and anonymity. That is, presenting data holistically means that specific stories may be identifiable by people who know participants. For this reason, pseudonyms are used, but even that may not be enough. Other attempts to minimise the risk are: paraphrasing, changing personal details such as age. However, the risk of the recognition exists and that is why it is important to talk about this possibility with participants. Furthermore, sharing personal narratives with a researcher means a joined construction of meanings and identities. The recognition that narrative regards identities brings a question about the analysis and the impact of the analysis on participants, namely, the researcher's deconstruction and interpretation of the narrative may be damaging. It is important to mention that because the private and personal worlds of the participants are brought into the public. For this reason it was necessary that participants had the full information about the study in order to obtain informed consent.

Older people with serious injuries may potentially be vulnerable and it is crucial, as in any research that involves human participation, to consider the potential impact of the research those involved. The use of narrative gives participants more opportunity to become more active in the research. They also have more contact with the researcher. There is a particular issue in narrative research which is related to encouraging people to share their life stories with researchers (J. Elliott, 2005).

Avoiding harm is a principle, however, talking about unpleasant situations may potentially cause discomfort to participants. For this reason, researchers need to be highly emphatic and able to manage the interaction and minimise any negative effects of the research process.

At all stages of the research process, participants were made aware of the nature of the research and what was required from them. They were ensured that their participation was voluntary and they had the right to withdraw at any stage of the research without explanation. Participants were made aware that their participation in the study would not affect the healthcare they were provided. They did not have to answer questions they did not wish to.

#### **4.5. Summary**

The main aim of this chapter was to present and justify the philosophical perspectives, approaches, methods and statistical techniques used in this research to achieve the aims of the research. This chapter discussed the use of specific data generation methods employed in the two studies on which this thesis was based. This research employed a mixed methods approach which enables a combination of the strengths of both qualitative and quantitative research to produce a more complete picture of the phenomena and provide stronger evidence of the findings. The stages of the research were presented and ethical considerations were discussed.



## 5. Quantitative findings

This chapter outlines the results of the analysis of the survey data and discusses the findings. The chapter begins with a presentation of the demographics of the study sample and the falls they experienced. The chapter continues with the summary of participants' responses to the scales assessing falls-efficacy, fear of falls and PTSD to provide the reader with the context of the data. The chapter next goes on to test the hypotheses. The final stage of the analysis involved conducting path analyses. First, an outline on how the data met the assumptions for conducting path analyses is presented, and then the results of path analyses are described. The chapter concludes with a discussion on the findings.

### 5.1. Participants

A total of 119 participants completed the survey for this study. Demographic characteristics of the sample can be viewed in Table 5. Approximately one third of participants were male. The age range of participants was 60 to 92 years, and the mean age was 74.52 (SD = 9.15). Participants reported approximately three health problems. For 72% of participants it was their first fall and for 23% of individuals it was their second or third fall. Only 5% of participants had more than three falls.

Variable	N	Mean (SD)	Minimum	Maximum	Percentages
<b>Gender</b>	119				
Male	42				35%
Female	77				65%
<b>Age</b>		74.52 (9.15)	60	92	
<b>Number of health problems</b>		3.13 (1.48)	1	8	
<b>Number of falls*</b>		1.53	1	6	
First fall	86				72%
Second fall	14				12%
Third fall	13				11%
Four or more falls	6				5%

\* including the last fall

Table 5. Demographic characteristics of participants (N = 119).

### 5.2. Fall characteristics

Table 6 shows that the majority of participants (70%) were very recent fallers and participated in the study within one week after falling. Only 10% of participants fell more than one month prior to the study. Approximately half of the falls occurred at home and one in two participants received help immediately after falling. Around one in five participants got up without assistance. Strikingly, 15% of individuals waited for help for an hour or more. In terms of injury types, the vast majority

of participants (93%) reported fractures and 7% of individuals experienced head trauma. Fractures to legs (42%) and hips (20%) were most commonly reported.

<b>Variable</b>	<b>Count (N = 119)</b>	<b>%</b>
<b>Place of a fall</b>		
House	66	55%
Outside of home	33	28%
Inside a building	3	2%
Outside	17	14%
<b>Time since falling</b>		
Less than a week	83	70%
1-2 weeks	18	15%
2-4 weeks	5	4%
1-2 months	3	2%
2-6 months	10	8%
<b>Help after falling</b>		
Nobody helped	23	19%
Someone helped right after falling	59	50%
Waited a couple of minutes	18	15%
Waited an hour	16	13%
Waited for hours	3	2%
<b>Injury location</b>		
<b>Fracture</b>	<b>111</b>	<b>93%</b>
Arm	12	10%
Wrist	11	9%
Collarbone	3	2%
Leg	50	42%
Hip	24	20%
Foot	5	4%
Back	6	5%
<b>Head trauma</b>	<b>8</b>	<b>7%</b>

Table 6. Summary of falls characteristics.

### 5.2.1. Falls attribution

The results revealed that the majority of respondents nominated “weather or environment” (29%) and “doing something” (26%) as main reasons for their falls (Table 7). On the other hand, 22% of participants stated they had fallen because their “health was not good” (18%) or “they were old” (4%). Approximately 35% of participants felt that it was at least “possible” that the reason why they fell might cause them future falls, while nearly 25% of individuals thought it was “definitely impossible”. One third of participants believed that the reason why they had fallen was definitely preventable. However, the same number of people believed their falls were definitely not preventable.

Variable	Count (N = 119)	Percentages
<b>Cause of falling</b>		
I am growing old	5	4%
My health is not good	22	18%
Weather/environment	35	29%
I did something	31	26%
Somebody did something	2	2%
Bad luck	22	18%
<b>Repeatability of a fall due to same reason</b>		
Definitely	13	11%
Very possible	11	9%
Possible	18	15%
Quite possible	38	32%
Maybe possible	10	8%
Not really possible	1	1%
Definitely not	28	23%
<b>Last fall preventability</b>		
Definitely	35	29%
Very possible	4	3%
Possible	6	5%
Quite possible	19	16%
Maybe possible	10	8%
Not quite possible	11	9%
Definitely not	34	29%

Table 7. Falls attribution.

### 5.2.2. PTSD prevalence

In the 17-items PTSD assessment tool, participants rated each item from 1 ("not at all") to 5 ("extremely") to indicate the degree to which they have been bothered by that particular symptom. Responses between 3-5 for each item were treated as "symptomatic". PTSD occurrence was indicated when individuals gave at least one symptomatic response to B cluster, three to C cluster and 2 to D cluster. It was found that 32% participants reported PTSD symptomology. Table 8 shows frequency of symptomatic responses to each item of the PTSD checklist. Symptomatic responses most commonly reported by all participants were: avoidance of trauma reminders (59%), avoidance of thoughts of trauma (50%), and irritability (50%). Apart from the above items, participants with PTSD symptoms also reported emotional reactions to trauma cues (89%), sleep disturbance (82%), exaggerated startle response (76%), and intrusive thought of trauma (74%).

	All (N = 119)		Non-PTSD (n = 81)		PTSD (n = 38)	
	Count	%	Count	%	Count	%
<b>B1 Intrusive thoughts of trauma</b>	40	33%	12	15%	28	74%
<b>B2 Recurrent dreams of trauma</b>	15	13%	0	0%	15	39%
<b>B3 Flashbacks</b>	27	23%	7	9%	20	53%
<b>B4 Emotional reactivity to trauma cues</b>	44	37%	11	14%	33	89%
<b>B5 Physiological reactivity to trauma cues</b>	23	19%	4	5%	19	50%
<b>C1 Avoiding thoughts of trauma</b>	59	50%	22	27%	37	97%
<b>C2 Avoiding reminders of trauma</b>	70	59%	35	43%	35	92%
<b>C3 Inability to recall aspects of trauma</b>	13	11%	0	0%	13	34%
<b>C4 Loss of interest</b>	22	18%	1	1%	21	55%
<b>C5 Detachment</b>	39	33%	14	17%	25	66%
<b>C6 Restricted affect</b>	24	20%	3	4%	21	55%
<b>C7 Sense of foreshortened future</b>	35	29%	6	7%	29	76%
<b>D1 Sleep disturbance</b>	45	38%	14	17%	31	82%
<b>D2 Irritability</b>	59	50%	28	35%	31	82%
<b>D3 Difficulty concentrating</b>	16	13%	5	6%	11	29%
<b>D4 Hypervigilance</b>	31	26%	8	10%	23	60%
<b>D5 Exaggerated startle response</b>	44	37%	15	18%	29	76%

Table 8. Frequency of symptomatic responses to each item of the PTSD checklist.

### 5.2.3. Fear of falls and falls-efficacy

Descriptive data for FoF, FE and PTSD falling are presented in Table 9. The mean scores, standard deviations, or frequencies and percentages, as appropriate, are presented for each variable. The results revealed high FoF prevalence among the participants (83%). In terms of FE, scores between 7-8 indicated low fall-related concern, 9-13 referred to moderate concern and scores above 14 related to high concern (Kim Delbaere, Close, Mikolaizak, et al., 2010). Over 90% of participants with PTSD symptoms reported high concerns over falling, while only one in four of individuals without PTSD symptoms reported high concerns.

Variable	Total (N = 119)			No PTSD symptoms (n = 81)		PTSD symptoms (n = 38)	
	Range	Mean	SD	Mean	SD	Mean	SD
<b>Fear factor:</b>	9-45	19.16	8.59	14.15	3.36	29.84	6.25
Re-experiencing	5-25	9.18	4.55	6.59	1.75	14.72	3.64
Avoidance	2-10	5.85	2.94	4.38	2.17	8.97	1.63
Hyperarousal	2-10	4.13	2.27	3.17	1.45	6.15	2.38
<b>Dysphoria</b>	8-40	15.02	7.72	11.05	3.67	23.50	6.90
<b>Falls-efficacy</b>	7-28	15.04	6.33	12.02	4.07	21.45	5.49
		Count	%	Count	%	Count	%
No concern		16	13%	14	17%	2	5%
Moderate concern		47	39%	46	57%	1	3%
High concern		56	47%	21	26%	35	92%
<b>Fear of falling present</b>		99	83%	62	76%	37	97%

Table 9. Descriptive data for falls-efficacy, PTSD score and PTSD factors; and fear of falling.

### 5.3. PTSD correlates

Bivariate correlations were performed using the Pearson two-tailed correlation analysis in order to address the following hypotheses:

1. Age is associated with PTSD presence.
2. Female gender is associated with PTSD presence.
3. Falls history is associated with PTSD presence.
4. Number of health problems is associated with PTSD.
5. The length of time waiting for help is uncorrelated with PTSD.

Correlates of full PTSD symptomology with demographic and falls characteristics are presented in Table 10. PTSD was significantly related to the length of time waiting for help with getting up after falling ( $r = .313, p < .001$ ), falls history ( $r = .281, p < .001$ ), older age ( $r = .281, p < .001$ ) and gender ( $r = .204, p < .001$ ). Thus, the results support the first five study hypotheses.

	<b>PTSD</b>	<b>Age</b>	<b>Gender</b>	<b>Help after falling</b>	<b>Falls history</b>
<b>Age</b>	.281**				
<b>Gender</b>	.204*	.220*			
<b>Help after falling</b>	.313**	.143	.030		
<b>Falls history</b>	.281**	.482**	.246**	.098	
<b>Health problems</b>	.403**	.407**	.318**	.063	.339**

\*  $p < 0.05$ , \*\*  $p < 0.001$

Table 10. Bivariate correlations between PTSD symptomology, demographic and falls characteristics

#### 5.4. Injury type and PTSD severity

It was hypothesised that PTSD severity would vary across different types of injury (Table 11). Figure 11 shows mean PTSD scores by injury location. An independent one-way ANOVA indicated that PTSD scores vary significantly according to injury location,  $F(4, 14) = 14.161$ ,  $p < .001$ . A post-hoc Tukey test indicated that hip fracture patients showed significantly higher PTSD scores than arm/wrist/collarbone fracture patients ( $p = .017$ ), leg/foot fracture patients ( $p < .001$ ). Back injury patients showed significantly higher PTSD scores compared to patients who reported upper ( $p < .001$ ), and lower limbs fractures ( $p < .001$ ). Head trauma patients reported significantly higher PTSD scores compared to upper ( $p < .001$ ) and lower limbs patients ( $p < .001$ ), back injury patients ( $p < .001$ ), and hip fracture patients ( $p < .001$ ).

<b>Injury location</b>	<b>Mean</b>	<b>SD</b>	<b>SE</b>	<b>95% CI of difference</b>
Fracture: arm/wrist/collarbone	28.23	12.68	2.49	23.11 - 33.35
Fracture: leg/foot	29.14	10.60	1.43	26.28 - 32.01
Hip fracture	39.75	15.72	3.21	33.11 - 46.39
Back injury	55.83	10.55	4.31	44.76 - 66.91
Head trauma	55.12	19.07	6.74	39.18 - 71.06

Table 11 Means, standard deviations, standard errors and confidence intervals of the difference in PTSD scores by injury location.

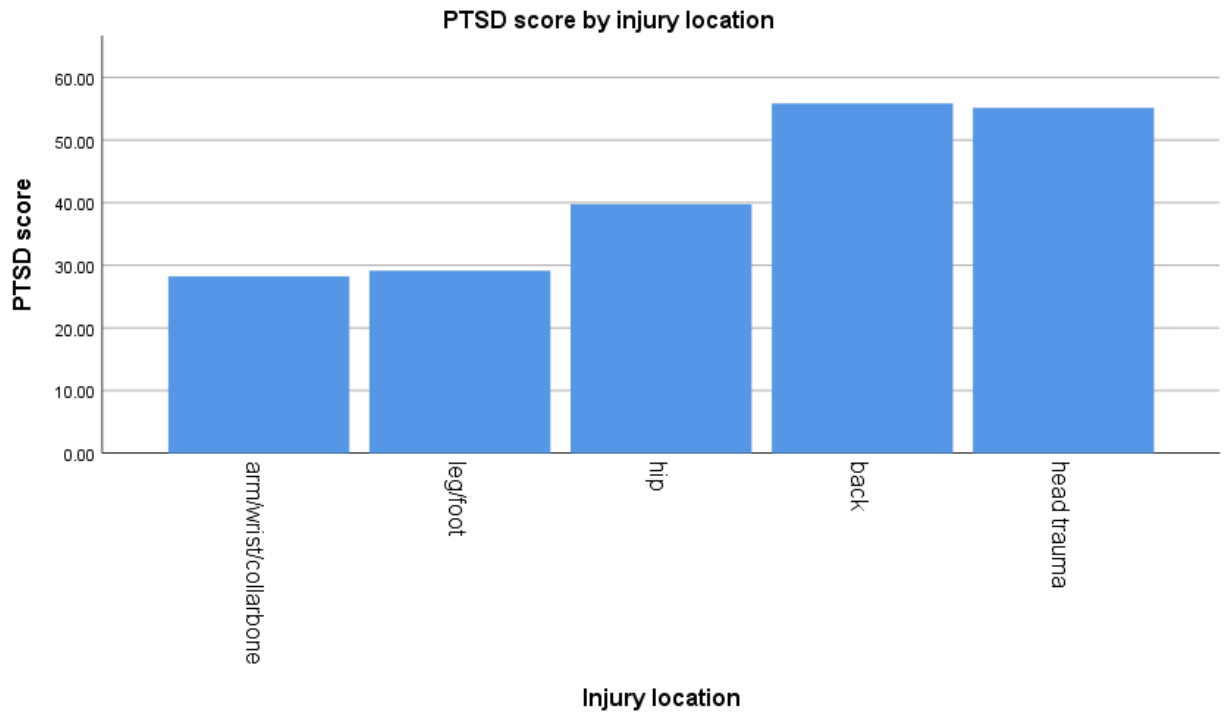


Figure 11. PTSD score by injury location.

## 5.5. Self-concept

Data from the self-concept scales of the fall participants were analysed to test two null hypotheses:

7. There is no difference between past and present self-concept scores.
8. There is no difference between past and future self-concept scores.

The Kolmogorov-Smirnov statistical test indicated that all variables were non-normally distributed ( $p < .05$ ). Thus, a Wilcoxon signed ranks test was applied to the data analysis. Due to the number of tests, the probability level was set at  $p \leq .001$  to avoid a rejection of a true null hypothesis (Type 1 error). Table 12 shows that there were statistically significant differences between the total past and present self-concept ( $z = -7.979, p \leq .001$ ); the total present and future self-concept ( $z = -8.869, p \leq .001$ ) and the total past and future self-concept ( $z = 3.770, p \leq .001$ ). Thus, the null hypotheses were rejected.

	Past versus present						Past versus future					
	Total (N = 119)		No PTSD (n = 81)		PTSD (n = 38)		Total (N = 119)		No PTSD (n = 81)		PTSD (n = 38)	
	z-score	p	z-score	p	z-score	p	z-score	p	z-score	p	z-score	p
Bored - interested	-7.339	.000**	-5.324	.000**	-5.104	.000**	-2.432	.015*	-.428	.669	-3.883	.000**
Happy -unhappy	-7.466	.000**	-5.556	.000**	-4.901	.000**	-2.014	.044*	-.049	.961	-2.652	.008*
Helpless - in control	-7.224	.000**	-6.441	.000**	-3.494	.000**	-1.320	.187	-.486	.627	-1.225	.221
Worried - relaxed	-7.011	.000**	-5.367	.000**	-4.347	.000**	-1.283	.199	-.240	.810	-1.809	.070
Dissatisfied – satisfied	-6.568	.000**	-5.952	.000**	-3.135	.002*	-1.386	.166	-1.417	.156	-.441	.659
Unattractive – attractive	-5.727	.000**	-3.923	.000**	-4.293	.000**	-2.530	.012*	-.104	.917	-3.318	.001**
Despondent – hopeful	-4.563	.000**	-3.057	.002*	-3.368	.001**	-3.417	.001*	-2.092	.026*	-2.605	.009*
Lacking control – self confident	-4.260	.000**	-2.966	.003*	-2.887	.004*	-2.295	.002*	-1.499	.134	-1.387	.165
Unstable -stable	-3.653	.000**	-.796	.426	-4.705	.000**	-.041	.967	-1.849	.064	-3.187	.001**
Worthless - of value	-4.296	.000**	-3.517	.000**	-2.549	.011*	-4.241	.000**	-2.800	.005*	-3.356	.001**
Forgetful - mindful	-2.111	.035*	-1.443	.149	-4.705	.000**	-2.928	.003*	-.297	.766	-3.913	.000**
Irritable – calm	-4.876	.000**	-3.642	.000**	-2.549	.001**	-2.052	.040*	-.960	.337	-1.563	.118
Unfeeling- caring	-2.493	.013*	-1.256	.209	-4.059	.028*	-1.812	.070	-.431	.666	-1.914	.056
Clumsy - agile	-7.330	.000**	-6.494	.000**	-3.183	.000**	-4.079	.000**	-2.581	.010*	-3.054	.002*
Dependent – independent	-8.258	.000**	-6.494	.000**	-2.192	.000**	-5.552	.000**	-3.812	.000*	-4.125	.000**
Inactive - active	-7.915	.000**	-6.554	.000**	-4.721	.000**	-3.619	.000**	-2.285	.022*	-3.078	.002*
Uncooperative– cooperative	-1.595	.111	-.250	.803	-5.225	.120	-2.299	.021*	-1.623	.105	-1.767	.077
Withdrawn – talkative	-1.719	.086	-1.716	.086	-4.448	.443	-.236	.814	-2.352	.019*	-1.263	.206
Unfriendly- friendly	-2.234	.020*	-.516	.606	-1.554	.021*	-2.067	.039*	-.221	.825	-2.199	.028*
Stupid - clever	-.763	.446	-2.783	.005	-1.593	.111	-1.452	.147	-2.258	.024*	-.024	.981
Total score	-7.979	.000**	-6.557	.000**	-4.549	.000**	-3.770	.000**	-1.731	.083	-3.282	.000**

\*\*  $p \leq 0.001$ , \*  $p < .05$

Table 12. Differences in the self-concept.



### **5.5.1. Past versus present**

The results revealed significant differences between the past and the present self-concepts of the participants. It was found that only several items remained insignificant, namely, “stupid - clever” ( $z = -.736, p = .446$ ), “withdrawn – talkative” ( $z = -1.719, p = .086$ ), “uncooperative – cooperative” ( $z = -1.595, p = .111$ ), “forgetful – mindful” ( $z = -2.111, p = .035$ ), “unfeeling- caring” ( $z = -2.493, p = .013$ ) and “unfriendly- friendly” ( $z = -2.234, p = .020$ ). Individuals with PTSD symptoms viewed themselves more negatively in terms of being despondent ( $z = -3.368, p \leq .001$ ), stability ( $z = -4.705, p \leq .001$ ), and forgetfulness ( $z = -4.705, p \leq .001$ ), which was not reported by participants without PTSD symptoms ( $z = -3.057, p = .002, z = -.796, p = .426; z = -1.433, p = .149$ , respectively).

Figure 12 suggests that participants without symptoms felt more inactive, uncooperative, unhappy, in control, worried, dissatisfied and unattractive, comparing to their past self-concept. Participants with PTSD symptomology viewed themselves more negatively in terms of dependency, inactivity, worthlessness, instability and dissatisfaction (Figure 13).

### **5.5.2. Past versus future**

There were only four items that remained significant across all the time frames: “clumsy – agile” ( $z = -.4079, p \leq .001$ ), “dependent – independent” ( $z = -5.552, p \leq .001$ ), “inactive – active” ( $z = -3.619, p \leq .001$ ), and “despondent – hopeful” ( $z = -3.417, p \leq .001$ ). Interestingly, an item “worthless - of value” became significant ( $z = -4.241, p \leq .000$ ). There were two items which differentiated people with and without PTSD symptoms. Participants with PTSD symptoms viewed themselves more negatively in terms of being bored ( $z = -3.883, p \leq .001$ ) and forgetful ( $z = -3.913, p \leq .001$ ). Future self-concept of participants without PTSD symptoms was comparable to their past self-concept (Figure 12). Thus, their falls appeared to impact their self-perception only temporarily. However, for individuals with PTSD symptoms, falls had more long-lasting consequences since their future self-perception appeared to be more negative than their past self-concept (Figure 13). Only several items returned to the previous levels, namely, “worried - relaxed”, “lacking control – confident” and “stupid – clever”.

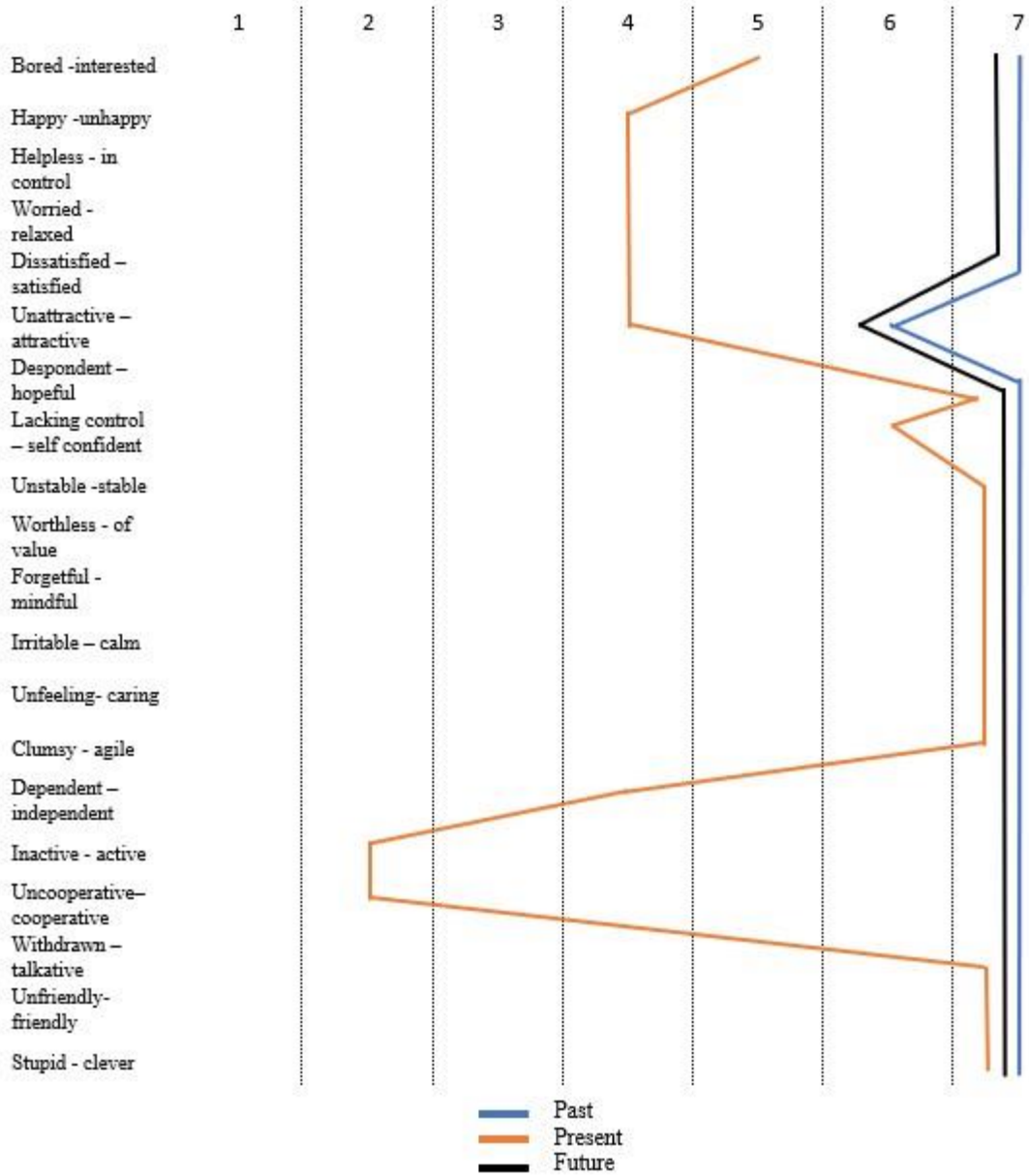


Figure 12. Median scores of each item of the self-concept scale for each timeframe of people without PTSD symptoms.

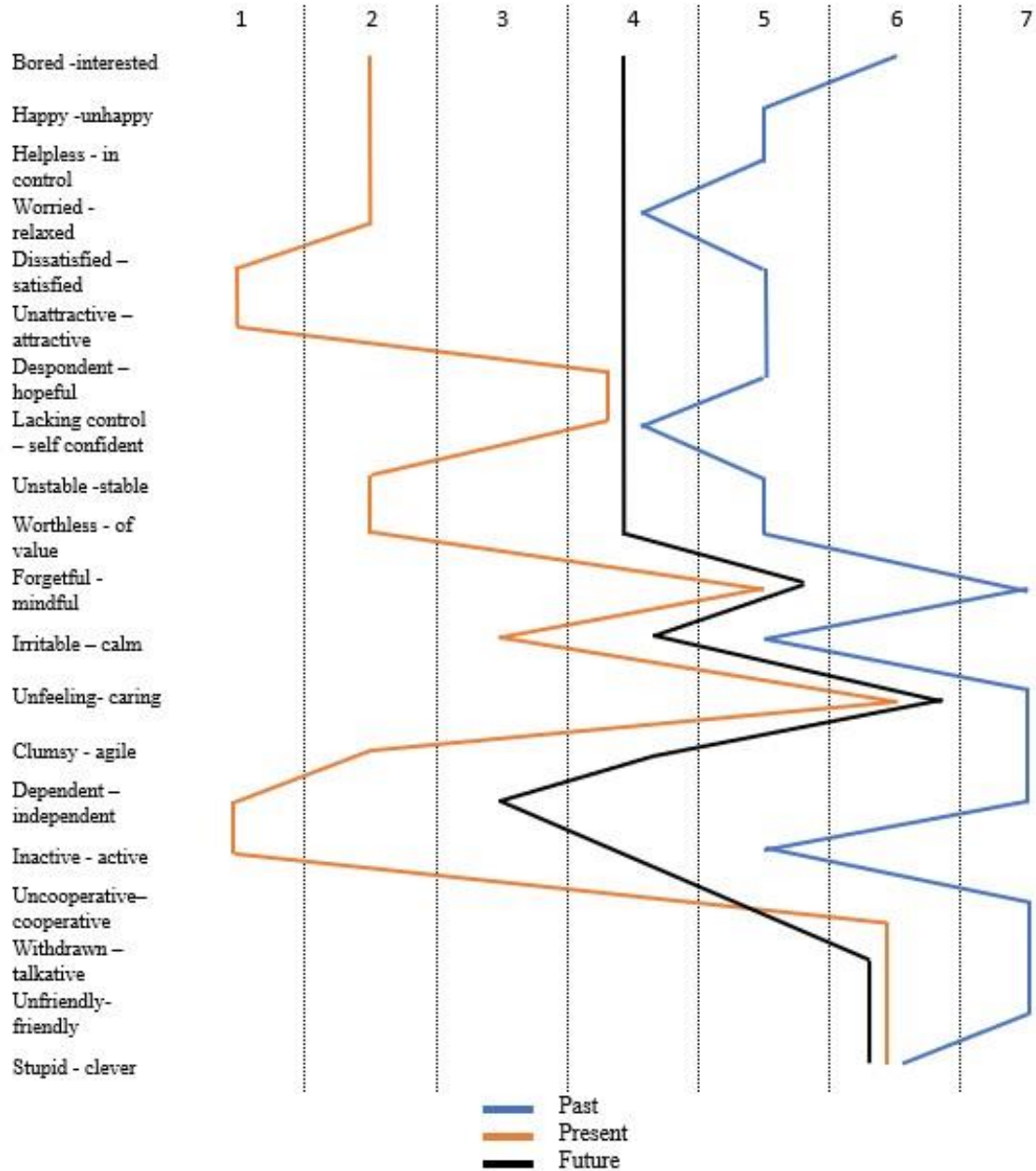


Figure 13. Median scores of each item of the self-concept scale for each timeframe of people with PTSD symptoms.

### 5.6. Selection, optimisation and compensation

Selection, optimisation and compensation model was assessed with the Short Version of the SOC Questionnaire (Baltes et al., 1995). The number of affirmative responses to the SOC behaviours represented the score. Table 13 presents median scores of the SOC strategies applied by participants with and without PTSD symptoms. The Kolmogorov-Smirnov statistical test indicated that all of the

variables were non-normally distributed ( $p < .05$ ). Thus, a Mann-Whitney test was applied to the data analysis. Data from the SOC questionnaire were analysed to test five null hypotheses:

9. There is no difference in the SOC strategies application between people with PTSD and without PTSD symptomology.

A Mann-Whitney test indicated that individuals with PTSD symptoms apply significantly less SOC strategies than people without such symptoms ( $U = 276, p < .001$ ), thus the null hypothesis was rejected.

10. There is no difference in the elective-based selection strategies application between people with PTSD and without PTSD symptomology.

A Mann-Whitney test indicated that individuals with PTSD symptoms apply significantly less elective-based selection strategies than people without such symptoms ( $U = 274.50, p < .001$ ), thus the null hypothesis was rejected.

11. There is no difference in the loss-based section strategies application between people with PTSD and without PTSD symptomology.

A Mann-Whitney test indicated that individuals with PTSD symptoms apply significantly less loss-based strategies than people without such symptoms ( $U = 578.50, p < .001$ ), thus the null hypothesis was rejected.

12. There is no difference in the optimisation strategies application between people with PTSD and without PTSD symptomology.

A Mann-Whitney test indicated that individuals with PTSD symptoms apply significantly less optimisation strategies than people without such symptoms ( $U = 497.50, p < .001$ ), thus the null hypothesis was rejected.

13. There is no difference in the compensatory strategies application between people with PTSD and without PTSD symptomology.

A Mann-Whitney test indicated that individuals with PTSD symptoms apply significantly less compensatory strategies than people without such symptoms ( $U = 784, p < .001$ ), thus the null hypothesis was rejected.

	<b>Range</b>	<b>All (N = 119)</b>	<b>No PTSD (n = 81)</b>	<b>PTSD (n = 38)</b>
<b>SOC total</b>	0-12	8	8	4
<b>Elective-based selection</b>	0-3	2	2	1
<b>Loss-based selection</b>	0-3	2	2	1
<b>Optimisation</b>	0-3	2	2	1
<b>Compensation</b>	0-3	2	2	1

Table 13. Median scores for SOC strategies application for participants with and without PTSD symptoms.

## 5.7. Path analyses

This section presents the final stage of the analyses of the quantitative data. Data screening was carried out to evaluate the data against the assumptions of normality, linearity, multicollinearity and homoscedasticity in order to conduct path analyses. The appropriate data screening was performed for the variables included in Model I and Model II. That is, falls history, falls attribution (repeatability), PTSD factors (fear factor and dysphoria), fear of falls and falls-efficacy. The section concludes with testing the models.

### 5.7.1.1. Outliers and missing data

Extreme values analysis on SPSS was used to check for outliers and indicated three outliers on the PTSD measure (a score of 77) and five outliers on the FES-I scale (a score of 28). Data were accurately entered into the database and the scores were within the range expected of the measures used. Inspection of the scores indicated that these extreme scores were representative of the participants scores on other measures (i.e. also scored highly on other measures), and so these outliers were considered unsuitable for deletion. No missing data were detected.

### 5.7.1.2. Normality

The statistics employed in the analysis plan require assumptions to be met and therefore normality of the variables hypothesised in the proposed models was assessed through applying the Kolmogorov-Smirnov statistical test and through the assessment of skewness and kurtosis. The Kolmogorov-Smirnov statistical test indicated that all of the variables were non-normally distributed ( $p < .05$ ). However, the Kolmogorov-Smirnov test does not necessarily indicate whether the deviation from normality is large enough to bias statistical analyses (Field, 2005). Thus, the data were further analysed by assessing the degree of skewness and kurtosis present, two key components of normality. The values were standardised by converting them into  $z$ -scores to observe how likely the values of skew and kurtosis were to occur (Field, 2005). The following formulae were applied:

$$Z_{\text{skewness}} = \frac{S - 0}{SE_{\text{skewness}}} \quad Z_{\text{kurtosis}} = \frac{K - 0}{SE_{\text{kurtosis}}}$$

In the above formulae S refers to the value of skewness, K refers to the value of kurtosis and SE is the standard error (Field, 2005). For medium-sized samples (between 50 to 300), it is assumed the null hypothesis can be rejected at absolute *z*-value over 3.29, which corresponds with the alpha level of 0.05, and conclude the distribution of the sample is non-normal (Kim, 2013). The results of the analysis are presented in Table 14. Significant skewness was present for the fear factor ( $z = 3.61, p < .05$ ), dysphoria ( $z = 5.39, p < .05$ ), and number of falls ( $z = 9.95, p < .05$ ). Significant kurtosis was present for avoidance ( $z = 6.22, p < .05$ ), and number of falls ( $z = 11.04, p < .05$ ).

### 5.7.1.3. Data transformation

Non-normal distributions are commonly found in psychological data. For instance, Blanca et al. (2013) reported that only 5.5% of the 693 distributions examined were close to expected values under normality, while 20% showed extreme deviation. Heath (1967) pointed out that for the statistical analysis of certain types of data the assumption that “the data are drawn from a normal population is usually wrong, and that the alternative assumption of a log-normal distribution is better”. Furthermore, the renowned statistician John Tukey suggested that all “amount” data should be converted to logarithms first (Limpert & Stahel, 2016). Therefore, data were transformed using logarithmic procedures.

One of the most commonly used methods for positively skewed data is logarithmic (log) transformation. Since the log-normal fits many skewed samples, it is preferable because it may describe the data more adequately in many cases than the normal distribution (Limpert & Stahel, 2011). Logarithms of the values were calculated by logarithmic transformation (base 10) of the original values. The Kolmogorov–Smirnov test of normality remained significant after logarithmic transformation. Values without logarithmic transformation were not normally distributed, as evidenced by the analysis of histograms and plots. However, after logarithmic transformation, the distributions of logarithms looked more symmetrical, hence normal or approximately normal. Data transformation improved the *z*-scores (Table 14). None of the scores for kurtosis remained significant. Significant skewness was present for repeatability ( $z = 4.13, p < .05$ ) and number of falls ( $z = 6.55, p < .05$ ).

Given that the logarithmic transformation of the data improved the distribution of the data – both skewness and kurtosis, it was decided that the transformed data would be used in further analyses.

Variable	Z-score values			
	Skewness	Skewness (log)*	Kurtosis	Kurtosis (log)*
Number of falls	9.95	6.55	11.04	1.83
Falls-efficacy	2.78	.45	1.82	2.54
Repeatability	.68	4.13	2.08	.46
Dysphoria	5.39	2.50	1.64	1.96
Fear factor	3.61	.062	.49	1.92

\* log-transformed data

Table 14. Z-scores for skewness and kurtosis for untransformed and log-transformed data.

#### 5.7.1.4. Multicollinearity

Multicollinearity exists when there is a strong correlation between two or more predictors in a regression model which presumably may indicate that the variables may essentially measure the same thing (Field, 2005). There was no evidence of the presence of multicollinearity in the data. There were no substantial correlations between variables since correlations of  $r > .90$  are considered problematic (Field, 2005). Further analyses of variance inflation factors (VIF) were performed to support that claim. None of the scores of the log-transformed data exceeded 1.50 for Model I and 3.20 for Model II indicating no multicollinearity problem since VIF values below 4.00 are considered acceptable (Hair et al., 2010). Furthermore, tolerance statistics well above 0.2 suggesting that multicollinearity was not considered a problem (Field, 2005).

#### 5.7.1.5. Independent errors

One of the assumptions of regression is that the observations are independent. To assess that, the Durbin-Watson statistic test was performed. It tests the null hypothesis that the residuals are not linearly auto-correlated. As a rule of thumb, values between 1.5 and 2.5 indicate no correlation in the data (Hair et al., 2010). The Durbin-Watson statistic was calculated to be 1.84 for Model I and 1.71 for Model II, therefore autocorrelation was assumed to be no concern for the analysis.

#### 5.7.1.6. Homoscedasticity

Homoscedasticity means that the variance of errors is the same across all levels of the independent variable. Tabachnick and Fidell (2007) claimed that slight heteroscedasticity has little effect on significance test, but much heteroscedasticity leads to serious distortion of findings and seriously weakens the analysis and consequently increases the possibility of a rejection of a true null hypothesis (Type 1 error). This assumption can be checked by visual examination of scatterplots. Ideally, residuals are randomly scattered around the horizontal line in oval or near oval-shape suggesting homoscedasticity (Tabachnick & Fidell, 2007). There seemed to be no clear relationships

between the residuals and the predicted values for both of the models indicating that heteroscedasticity should not be a concern for the current study.

### 5.7.2. Bivariate correlations

The next stage of the data analysis considered the strength and direction of correlation by testing the correlation coefficient among the variables used in Model I and Model II. The correlation coefficient was conducted using the Pearson two-tailed correlation analysis. Table 15 presents correlation matrix with Pearson correlation coefficients ( $r$ ) reported for each pair of variables, along with significance levels.

	Number of falls	Dysphoria	Fear Factor	Repeatability	Fear of falls
<b>Dysphoria</b>	.197*				
<b>Fear Factor</b>	.223*	.785**			
<b>Repeatability</b>	-.332**	-.447**	-.303**		
<b>Fear of falls</b>	-.211*	-.321**	-.293**	.421**	
<b>Falls-efficacy</b>	.361**	.728**	.668**	-.449**	-.494**

\*  $p < 0.05$ , \*\*  $p < 0.001$

Table 15. Correlations of all variables included in the model I and the model II.

The analyses revealed significant correlations among all variables proposed for the models. FoF was most strongly correlated with FE ( $r = -.494, p < .001$ ) and repeatability ( $r = .421, p < .001$ ). Notably, FoF was weakly correlated with falls history ( $r = -.228, p = .013$ ). On the other hand, falls history was rather weakly correlated with PTSD factors and more strongly associated with FE ( $r = .395, p < .001$ ). FE most strongly correlated with PTSD factors: dysphoria ( $r = .728, p < .001$ ) and the fear factor ( $r = .686, p < .001$ ). Repeatability showed the strongest correlation with FoF ( $r = -.421, p < .001$ ).

### 5.7.3. Path analyses of the hypothesised models

The final stage of the data analysis involves testing two models proposed in the Methodology Chapter by carrying out path analyses. The aim of the analysis was to investigate the relationships between FE, FoF and anxiety, which are often misinterpreted in the context of PTSD symptoms. The first part of the analysis focuses on Model I constructed around the relationships between fear of falling, falls-efficacy, anxiety (dysphoria factor), number of previous falls and falls attribution (repeatability) proposed by Hadjistavropoulos et al. (2011) in the Multifactorial Causation Model of Falls and Fear. The section continues with the analysis of Model II which proposes different relationships between the constructs and expands on them by including the fear factor of PTSD symptomology.



All estimations of model parameters were examined using full information maximum likelihood. Meeting the criteria as follows would be indicative of a good fit to the data: 1) a nonsignificant chi-square, 2) a ratio of chi-square/ df under 2 (Tabachnick & Fidell, 2007), 3) an RMSEA of < .07 is considered ideal (Steiger, 2007), 4) values of 0.95 or greater for TLI and 5) values of 0.95 or greater for CFI (Hu & Bentler, 1999).

### 5.7.3.1. Model I

Model I was tested using path analysis to explore the relationships between FE, FoF and anxiety proposed in the Multifactorial Causation Model of Falls and Fear (Hadjistavropoulos et al., 2011). The aim of the analysis was therefore to investigate how FE is influenced by other components of the model – FoF, anxiety and other contributors to fear, which according to Hadjistavropoulos et al. (2011) are e.g. past falls and beliefs. In the present analysis past falls were assumed to be the number of previous falls and beliefs were assessed with repeatability – a belief the reason why one fell will cause them another fall in the future which relates to the level of control over factors that caused one to fall.

The standardised estimates for each path in the model are reported in Figure 14. The overall fit for the model I was poor for the data used in the current study  $\chi^2(6, N = 119) = 53.618, p < .001$ . Other values of model fit were also poor (RMSEA = .259, TLI = .552 and CFI = .731) and not satisfactory.

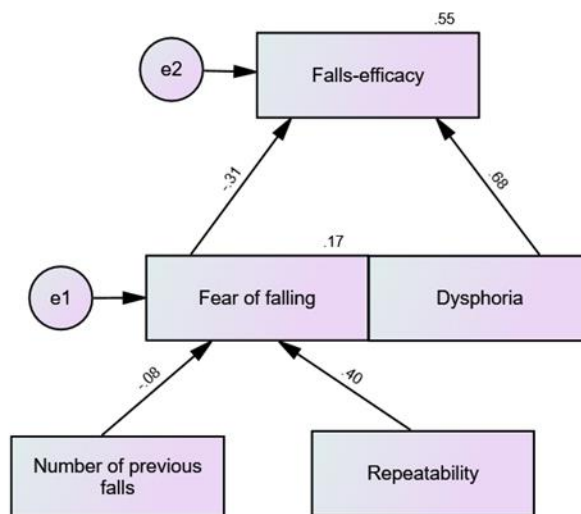


Figure 14. Path analysis with standardised estimates of the hypothesised relationships between constructs in the model I.

Table 16 presents total, direct and indirect effects for each construct under investigation. The analysis revealed that FE was most strongly associated with dysphoria (.677,  $p = .008$ , 95% CI [.608, .757]) and more weakly with FoF (-.306,  $p = .008$ , 95% CI [-.413, -.182]). FoF was found to

be related to repeatability (.398,  $p = .011$ , 95% CI [.310, .492]), but not to the number of previous falls (-.082,  $p = .109$ , 95% CI [-.158, .004]). In fact, previous falls number was not associated with FE (.025,  $p = .071$ , 95% CI [.003, .062]).

<b>Effect</b>	<b>Total</b>	<b>95% CI</b>	<b>Direct</b>	<b>95% CI</b>	<b>Indirect</b>	<b>95% CI</b>
<b>Of dysphoria on</b>						
<b>FE</b>	.677*	[.608, .757]	.677*	[.608, .757]	-	-
<b>Of past falls on</b>						
<b>FoF</b>	-.082	[-.158, .004]	-.082	[-.158, .004]	-	-
<b>FE</b>	.025	[.003, .062]	-	-	.025	[.003, .062]
<b>Of repeatability on</b>						
<b>FoF</b>	.398*	[, .492]	.398*	[.310, .492]	-	-
<b>FE</b>	-.122*	[-.176, -.071]	-	-	-.122*	[-.176, -.071]
<b>Of FoF on</b>						
<b>FE</b>	-.306*	[-.413, -.182]	-.306*	[-.413, -.182]	-	-

$p < 0.01$

Table 16. Total, direct and indirect effects for each component of the model I.

### 5.7.3.2. Model II

Model II builds upon the relationships between FE, FoF, anxiety and falls beliefs proposed by Hadjistavropoulos et al. (2011) by including PTSD symptoms into the model. The model does not treat PTSD as a unidimensional experience but it considers how particular aspects of PTSD symptomology relate to falls-efficacy levels. The assumption behind the model is that individuals after experiencing injurious falls may struggle with suppressing fear. Fear, as the key factor in the model, would fuel anxiety and directly and indirectly influence fall-related factors, namely – falls attribution, FoF and consequently FE.

The standardised estimated for each path in the model are reported in Figure 15. The overall fit for the model was good for the data used in the current study  $\chi^2(4, N = 119) = 5.988$ ,  $p = .200$ . Other values of model fit were also satisfactory (RMSEA = .065, TLI = .982 and CFI = .993). The ratio of chi-square to degrees of freedom 1.5 was suggesting a reasonable fit in light of sample size (Tabachnick & Fidell, 2007).

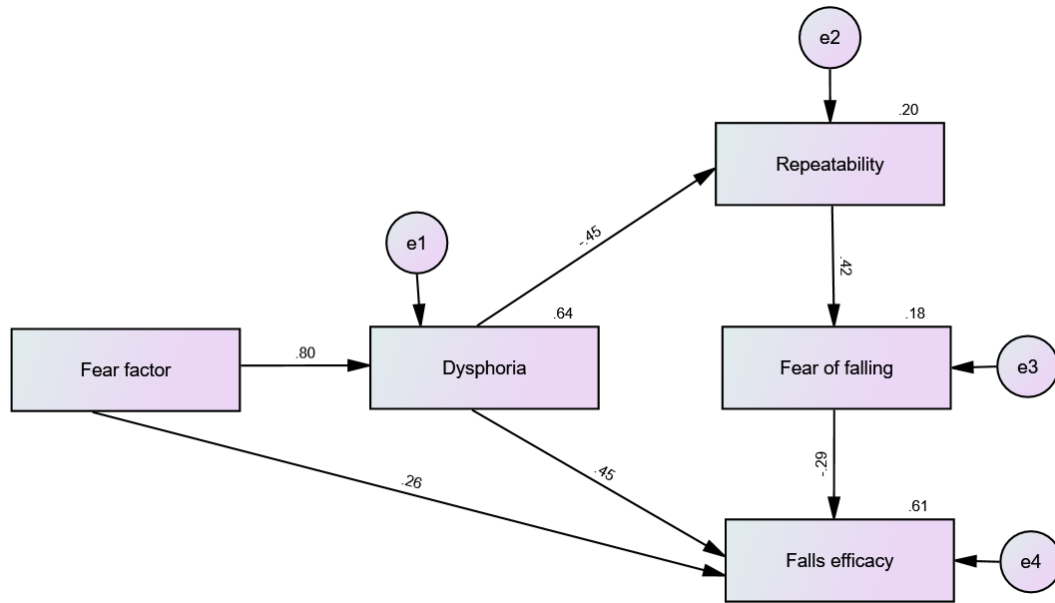


Figure 15. Path analysis with standardised estimates of the hypothesised relationships between constructs in the model II.

Effect	Total	95% CI*	Direct	95% CI	Indirect	95% CI
<b>Of fear factor on</b>						
Dysphoria	.802*	[.731, .843]	.802*	[.731, .843]	-	-
Repeatability	-.358*	[-.441, -.199]	-	-	-.358*	[-.441, -.199]
FoF	-.151*	[-.200, -.075]	-	-	-.151*	[-.200, -.075]
FE	.663*	[.580, .724]	.261*	[.109, .416]	.402*	[.279, .546]
<b>Of dysphoria on</b>						
Repeatability	-.447*	[-.569, -.295]	-.447*	[-.569, -.295]	-	-
FoF	-.188*	[-.254, -.099]	-	-	-.188*	[-.254, -.099]
FE	.501*	[.344, .658]	.447*	[.303, .632]	.054*	[.029, .086]
<b>Of repeatability on</b>						
FoF	.421*	[.340, .516]	.421*	[.340, .516]	-	-
FE	-.120*	[-.178, -.072]	-	-	-.120*	[-.178, -.072]
<b>Of FoF on</b>						
FE	-.286*	[-.396, -.183]	-.286*	[-.407, -.183]	-	-

Table 17. Total, direct and indirect effects for each component of the model II.

Table 17 presents total, direct and indirect effects for each construct under investigation. As hypothesised, the direct path between the fear factor and dysphoria was very strong (.802,  $p = .022$ , 95% CI [.731, .843]). On the other hand, the direct path between the fear factor on FE was significant, yet not as strong as anticipated (.261,  $p = .009$ , 95% CI [.109, .416]). Much stronger relationship was found between dysphoria and FE (.447,  $p = .006$ , 95% CI [.303, .632]).

Repeatability, which was directly associated with dysphoria ( $-.447, p = .013, 95\% \text{ CI } [-.569, -.295]$ ), and indirectly with the fear factor ( $-.358, p = .027, 95\% \text{ CI } [-.441, -.199]$ ), related to FoF ( $.421, p = .006, 95\% \text{ CI } [.340, .516]$ ) which in turn was significantly related to FE ( $-.286, p = .006, 95\% \text{ CI } [-.396, -.183]$ ). The indirect relationship between repeatability and FE was minor yet significant ( $-.120, p = .005, 95\% \text{ CI } [-.178, -.072]$ ). All of these variables combined accounted for 61% of the variance in FE.

#### 5.7.4. Comparing the models

Table 18 compares the fit of Model I and Model II. Model I was found to be a poor fitting model. It failed to satisfy any of the model fit indices including the chi-square test  $\chi^2(6, N = 119) = 53.618, p < .001$  and other values of model fit (RMSEA = .259, TLI = .552 and CFI = .731). Model II on the other hand, satisfied all model fit indices. The chi-square test was found to be insignificant,  $\chi^2(4, N = 119) = 5.988, p = .200$ . Other values of model fit were also satisfactory (RMSEA = .065, TLI = .982 and CFI = .993). The ratio of chi-square to degrees of freedom 1.5 was suggesting a reasonable fit in light of sample size (Tabachnick & Fidell, 2007). Thus, it can be concluded that Model II benefited from including the fear factor of PTSD, as well as from expanding the relationships proposed in Model I.

	<b>Recommended value</b>	<b>Model I</b>	<b>Model II</b>
<b>Chi square goodness-of-fit</b>	$p > .05$	53.518, $p < .001$	5.988, $p = .200$
<b>Degrees of freedom</b>		6	4
<b>Chi-square/ df</b>	$< 2$	8.92	1.50
<b>RMSEA</b>	$< .07$	.259	.065
<b>TLI</b>	$> .95$	.552	.982
<b>CFI</b>	$> .95$	.731	.993

Table 18. Model fit comparisons between Model I and Model II.

#### 5.8. Summary of the survey findings

The study revealed that most individuals were very recent fallers. For the vast majority of them it was their first fall. Half of the respondents had a fall at home. “Weather or environment” and “I did something” were the most often nominated causes of their falls. The majority of the sample received an injury to the lower limb. One in three believed the reason why they fell would cause them future falls. Half of the participants reported compromised falls-efficacy and the vast majority experienced FoF. Approximately one in three fallers reported PTSD symptomology. Irritability, avoiding the reminders and thoughts of trauma were common among participants despite the presence of PTSD

symptomology. PTSD correlated most strongly with injury type, requiring help with getting up after falling. Significant associations were found between PTSD and falls history, older age and gender.

Falls appeared to have much influence on older people's self-perception, since there were statistical differences between the past and the present self-concept across many items. When comparing the present and the future self-concept, all participants viewed themselves more negatively in the present across the same dimensions. However, participants with PTSD symptoms felt more unstable. In terms of the past and the future self-concept, for participants without PTSD symptoms their future self-concept resembled their past self-concept, suggesting that falls might have only temporal effect on their self-perception. However, falls might have long-lasting consequences for people with PTSD, since only several items of their future self-concept returned to the levels prior to falling. The results of the analysis of the SOC strategies application revealed that participants with PTSD applied significantly less SOC strategies. They applied significantly less elective-based and loss-based selection strategies, optimisation and compensatory strategies than individuals without PTSD symptoms.

The results presented herein show that the relationships between FoF, anxiety and FE proposed in the Multifactorial Causation Model of Falls and Fear (Hadjistavropoulos et al., 2011) are rather problematic. A lack of acknowledging factors influencing anxiety and limiting the role of anxiety appeared to be partially responsible for poor fit of Model I. The analysis of Model II revealed that dysphoria strongly related to FE, as Model I predicted, but also to falls attribution which in turn related to FoF. Furthermore, the inclusion of the fear factor in the model revealed that it strongly related to dysphoria, but also to FE. Thus, including PTSD factors in Model II was found to enrich the relationships proposed in the Multifactorial Causation Model of Falls and Fear (Hadjistavropoulos et al., 2011).

## **5.9. Discussion**

The present study revealed that 32% of participants developed PTSD symptomology. The number is slightly higher than the prevalence reported in the previous research (Bloch et al., 2014; Chung et al., 2009; Jayasinghe et al., 2014), which found that approximately one in four older adults developed PTSD after injurious falls. Older adults in the present study were recent fallers and 70% of them were assessed within a week after falling. Participants in the study conducted by Jayasinghe et al. (2014) were usually assessed within three days after falling. No data on the time of the assessment is available in the study by Bloch et al. (2014).

### **5.9.1. Factors associated with PTSD severity**

One of the aims of the study was to explore aspects related to post-fall PTSD development among older adults. The following section discusses factors linked with PTSD which were pre-determined in the literature reviews of previous studies (Bloch et al., 2014; Chung et al., 2009; Eckert et al., 2019; Jayasinghe et al., 2014; Kornfield et al., 2017), and quantitatively assessed in the present research. Namely, age, gender, falls history, number of health problems, injury type, and the length of time spent on the ground waiting for help after falling.

#### **5.9.1.1. Age**

The present study found that older age was associated with PTSD severity, although Kornfield et al. (2017) and Bloch et al. (2014) reported that older adults had lower rates of PTSD than younger adults. There is a notion that PTSD is more strongly related to younger age (Chang et al., 2017). Various explanations have been proposed to explain that, such as the reluctance of older generations to acknowledge psychopathology (Cook & Niederehe, 2007). Others have suggested that old age may actually be protective against the development of trauma-related symptoms (Fontana & Rosenheck, 1994). However, such explanations may not necessarily apply to older adults in Poland, where PTSD rates are very high (Lis-Turlejska et al., 2016). Thus, potentially for some individuals, their falls did not trigger PTSD development, since they might have been already traumatised by some previous events.

#### **5.9.1.2. Gender**

A weak, yet significant correlation between PTSD severity and female gender was found. Previous research provided mixed results. Bloch et al. (2014) and Eckert et al. (2019) did not find any associations between gender and PTSD. Jayasinghe et al. (2014) and Chung et al. (2009) reported significant correlations between PTSD and female gender, but in the latter study the correlation was significant only at baseline. Women have two to three times higher risk of developing PTSD (Olf, 2017). Women also tend to show higher levels of PTSD compared to men (Birkeland et al., 2017). Olf (2017) found that women scored more highly on subjective responses such as threat perception in the acute phase. In order to cope with their trauma responses, women tend to look for social support (Olf, 2017). Given that most of the present study participants (70%) were assessed within a week after falling and they were still at hospital, they were unable to receive much social support from their relatives, compared to the support they would have received at home. Since older adults' families in Poland are prepared to provide care and support for them (Kamińska et al., 2017), older women may feel that their needs are not met at hospital, especially, when healthcare providers tend to focus on basic medical needs rather than on the patient's needs (LeClerc et al., 2002). Thus, women in particular may be vulnerable to PTSD development.

### **5.9.1.3. Falls history**

PTSD symptomology was found to be significantly correlated with falls history, which is in line with Bloch et al. (2014), who reported that previous falls were related to PTSD at two months follow-up; and Chung et al. (2009) who found that previous falls correlated with acute PTSD. They did not find such association at 12 and 24 weeks follow-ups. However, the association between PTSD and falls history may be more complex, since it is hard to determine whether PTSD is connected to the last fall, past falls or previous negative events. Previous qualitative research conducted by Zidén et al. (2008), revealed that hip fracture patients described their injuries as having happened unexpectedly and linked them with a chain of previous aversive events such as depression, previous falls, sensory impairments, loss of family members or stroke. They felt their hip fractures came as a final blow, comparable to a serious illness that would lead to permanent disability. The accumulation of aversive events may relate to greater susceptibility to PTSD, especially if the subsequent trauma is subjectively experienced as similar to the prior trauma (Solomon & Ginzburg, 1998). That is, previous falls may therefore have much potential to trigger trauma responses for future falls.

### **5.9.1.4. Injury type**

Previous research has found that individuals who are injured during traumatic events are more likely to develop PTSD (Delahanty et al., 2003; Gabert-Quillen et al., 2011). The current study found that PTSD scores were higher among patients with hip fracture, head injury and injury to the back. This is in contrast to Jayasinghe et al. (2014), who found that head injury was not related to PTSD. On the other hand, Jayasinghe et al. (2014) found that back injury was a risk factor for PTSD development, and the current study revealed that individuals with back injury reported higher PTSD scores than individuals with upper or lower limb fractures. Indeed, PTSD has been reported by spine fracture patients (Briem et al., 2007). Soberg et al. (2010) reported that one third of orthopaedic trauma patients had a diagnosis of PTSD and PTSD score increased with injury severity. Zatzick et al. (2002) found that injury patients experienced PTSD at one year.

For many years hip fractures have been one of the most serious health care problems among seniors (Marks, 2010) and even considered “death sentence” (Brennan-Olsen, 2018). Compared to a fracture of any other bone, a hip fracture results in the most serious of all consequences, since they commonly lead to premature death, high rates of morbidity and reduced life quality (Marks, 2010). Hip fracture patients have a five-to-eight times higher risk of dying within the first three months compared to patients with other fractures, and this risk of death remains for nearly ten years (Abrahamsen et al., 2009). Functional recovery following hip fractures is limited to less than 50% (Wehren & Magaziner, 2003), and the success of the recovery is highly associated with self-efficacy (Fortinsky

et al., 2002). Hip fracture patients often experience various degrees of progressive disability which consequently may require long-term care and extensive use of ongoing services (Wehren & Magaziner, 2003). Approximately one in five hip fracture patients enters long-term care in the first year after fracture (Public Health England, 2020). Moreover, older people who have suffered a hip fracture are at increased risk of subsequent hip fractures (Shen et al., 2014), which are associated with even more severe outcomes such as postoperative results, more complications and higher mortality than first fractures (Omsland et al., 2013).

Given the severity of consequences associated with hip fractures, it is particularly interesting that Kornfield et al. (2017) did not find PTSD to be a problem among hip fracture patients, while Eckert et al. (2019) and the present study found posttraumatic stress symptoms to be problematic among individuals with hip fractures. The reason for such discrepancy in findings may relate to the fact that Kornfield et al. (2017) excluded individuals with depression. PTSD and depression tend to co-occur (Ikin et al., 2010; Kessler et al., 1995). Marshall et al. (2001) found that higher number of PTSD symptoms was related to more severe depressive symptoms. PTSD and depression share similar predictor variables (O'Donnell et al., 2004). Hence, depressed individuals may be likely to develop PTSD when faced with a significant health problem such as hip fractures. Moreover, hip fractures and depression appear to be strongly related. That is, depression is significantly associated with an increased risk of fracture (Qiu et al., 2018; Whooley et al., 1999), and hip fractures are robust risk factors for depression (Chang et al., 2014; Müller-Thomsen et al., 2002). Approximately one in five hip fracture patients develop depression (Rathbun et al., 2018) and the greatest period of risk is immediately after the fracture (Lenze et al., 2007). Thus, Kornfield et al. (2017) excluded individuals who were very likely to show post-fall PTSD symptoms and that presumably influenced the prevalence rates of PTSD.

#### **5.9.1.5. Number of health problems**

Present study found a moderate correlation between PTSD symptomology and health problems. Jayasinghe et al. (2014) reported such associations while Bloch et al. (2014) did not find the correlation. However, loss of health is a predominant factor for evoking stress (Holmes & Rahe, 1967), and poor health has been found to be risk factor for PTSD development (Van Zelst et al., 2003). A review of 12 case studies found that 83% of them suggested that poor physical health played a significant role in triggering PTSD (Hiskey et al., 2008). Poor health may predispose individuals to increased risk for PTSD development (Cheng et al., 2014). Moreover, individuals with PTSD symptoms have higher numbers of comorbid diagnoses than people without PTSD (Kaiser et al., 2016). Decreased health associated with later life may affect individuals' capacity to adapt to traumatic events (Böttche et al., 2012), since older adults may often cope with multiple



problems such as losses of resources, grief and other challenging issues in life (U.S. Census Bureau, 2004). Being confronted with the losses connected with advanced age can also call up the remembrance of losses encountered earlier in life (Solomon & Ginzburg, 1998). Thus, the cumulation of circumstances can trigger post-fall PTSD symptoms (Hiskey et al., 2008).

#### **5.9.1.6. Help after falling**

This study revealed a significant correlation between PTSD symptomology and the length of time spent on the ground waiting for help after falling. It is in sharp contrast to Chung et al. (2009) who found no association between the assistance with rising up and PTSD diagnosis. Similarly, Jayasinghe et al. (2014) found no correlation between the length of time spent on the ground waiting for help and PTSD. The results of previous studies are rather surprising, since the inability to get up without assistance, and the time spent on the ground waiting for help, may have serious consequences for older adults, such as admissions to hospital and subsequent moves into long term care (Fleming & Brayne, 2008). Lying on the ground for a long time is associated with more severe injuries (Fleming & Brayne, 2008). It is a risk factor for poor medical outcomes (Tinetti et al., 1993), and a predictor of serious fall-related injuries in old age (Bergland & Laake, 2005).

#### **5.9.1.7. Summary**

One of the aims of the study was to explore aspects related to post-fall PTSD development among older adults. This study found that post-fall trauma was associated with older age, female gender, falls history, injury type, comorbid health problems and the length of time waiting for help. The accumulation of previous aversive experiences, especially given the fact that Polish people have witnessed many traumatic events over the last century, may be related to a higher prevalence of post-fall PTSD among older adults. Previous falls and health problems may be perceived as yet another source of aversive events, thus fallers with a higher number of previous falls and health issues may be more likely to show PTSD symptoms. The length of time spent on the ground waiting for help was also associated with PTSD. This is particularly alarming, since up to 66% of older adults are unable to get up without assistance after falling (Fleming & Brayne, 2008; Tinetti et al., 1993).

#### **5.9.2. The impact of falls**

The second aim of the research was to explore the impact of falls on older people's recovery and lives. This was done by exploring the impact of falls and fall-related trauma on falls-efficacy. Two models where FE is a central construct were offered and analysed. The next stage of the study involved the assessment of self-concept over time – the past, present and future. The last stage of the study included the investigation of the SOC competency among traumatised and non-

traumatised individuals, in order to determine whether the presence of PTSD might influence the application of SOC strategies to one's recovery. The following section discusses the findings.

### **5.9.2.1. Influence of PTSD on falls-efficacy**

The reason for conducting path analyses was to examine the associations between falls-efficacy and other fall-related constructs. The study conducted by Delbaere et al. (2010) revealed that older adults' perceived falls-efficacy affected their functioning, despite their physiological status. That is, FE appears to be an important factor to consider in recovering older adults. FE is a crucial construct in the models since it reveals if a person believes he or she is able to participate in specific activities without falling (Tinetti et al., 1994). Two models were proposed. The first model was built around the Multifactorial Causation Model of Falls and Fear (Hadjistavropoulos et al., 2011), which predicted that FE is related to FoF and anxiety. Model II also assumed that dysphoria and FoF relate to FE but more complex relationships were proposed. That is, three different pathways to FE were offered to explain the complexity and multidimensionality of FE.

#### **5.9.2.1.1. Model I**

In Model I, FE is related to FoF and dysphoria, yet no relationship between FoF and anxiety is predicted. FoF is influenced by falls history and falls attribution (repeatability), but no factors relate to anxiety. The model showed very poor fit. Path analyses revealed that falls history was weakly related to FoF. Furthermore, repeatability was much more strongly related to FoF than to FE.

##### **5.9.2.1.1.1. Previous falls and FoF**

According to the traditional view, FoF and falling are always related (Friedman, et al., 2002; Howland et al., 1993; Lach, 2005; Lachman et al., 1998; Salkeld et al., 2000; Zijlstra et al., 2007). Contrary to the previous research, the present study did not find FoF and falls history to be related, which is in line with Clemson et al. (2015), and Pohl et al. (2015). A possible explanation for the above finding is the sample characteristics. All participants were fallers and for the majority of them (72%) it was their first fall, yet 83% of all individuals reported FoF. Thus, FoF might have been triggered by the last fall. Furthermore, high FoF prevalence may also relate to the protective role of FoF, since nearly 90% of participants had their falls within a month. FoF may actually protect older adults from undertaking relatively risky activities which could result in adverse effects or even another fall, and falls among inpatients are not uncommon (RCP, 2015). Too low FoF may lead to overrating one's capabilities. Delbaere et al. (2010) found that about 20% of people reported low perceived fall risk even though they had high physiological risk; therefore, they could be at risk of falls that could be prevented. That is, given the characteristics of the sample, high FoF may not be related to the number of all falls, but to the last fall and since it occurred recently for the participants, FoF may protect them from future falls and negative consequences related to them.

#### 5.9.2.1.1.2. **Repeatability and FoF**

The results revealed that there was a significant path between FoF and repeatability. Falls have uncontrollable, unexpected and random nature (Dollard et al., 2012). Those who attribute a fall to an unpreventable cause are less likely to recover (McKee, Orbell, & Radley, 1999). Simpson et al. (2003) found that older adults who attributed their falls to chance, tended to believe that nothing could be done to prevent falls. Furthermore, participants believed that avoidance is a sensible thing to do (Simpson et al., 2003). Older adults may avoid certain activities that may result in falls since they believe that if they do not, falls will be unavoidable (Landers et al., 2016). While effective in short term, such restriction of activities can strengthen maladaptive beliefs and consequently result in additional fear (Hadjistavropoulos et al., 2011).

A belief that the cause is stable may lead to feelings of hopelessness (Borkan, et al., 1991), helplessness and depression (Abramson et al., 1989). It may result in a lack of motivation to undertake any actions in preventing future falls. On the other hand, attributing falls to unstable causes may result in feeling of being in control (Weinberg & Strain, 1995), and consequently people may engage in behaviours that would improve their environment. Attributing their falls to a modifiable resource (e.g. home environment) of which people believe they have control over (e.g. removing slippery rugs), allows people to think they can avoid future falls (Dollard et al., 2012). Thus, presumably fall-related beliefs affect FoF.

#### 5.9.2.1.1.3. **FoF and FE, dysphoria and FE**

FoF and dysphoria were both found relate to FE. However, one of the major issues with the model proposed by Hadjistavropoulos et al. (2011) is a lack of factors associated with anxiety. Fear and anxiety are both emotional responses to aversive events, yet the model does not predict any associations between anxiety occurrence and other factors. Hadjistavropoulos et al. (2011) assumed that one may be always fearful towards a specific situation, action, event, but one would only experience anxiety while performing, preparing to perform or remembering performing the action. That is, the two constructs are not assumed to co-occur at the same time. However, anxiety may actually affect FoF and be responsible for maladaptivity of FoF (Adamczewska & Nyman, 2018), which is not predicted by the model designed by Hadjistavropoulos et al. (2011). Hence, Model II included such associations in order to address the issues.

#### 5.9.2.1.2. **Model II**

Model II proposed several relationships between the construct and offered a new uptake on the concept of falls-efficacy as multidimensional. According to the model, there are three paths related to FE: at the moment falls-efficacy, constant falls-efficacy and elaborated falls-efficacy. They are discussed in the following sections. The following sections discusses the paths.

#### 5.9.2.1.2.1. **Path I**

Path I relates to the direct relationship between the fear factor and FE – “at the moment falls-efficacy”. According to the path, symptoms of re-experiencing, hyperarousal and avoidance make someone fearful when faced with a present threat resulting in maladaptive responses since one feels incapable of performing present activities at the very moment. Path analyses revealed a significant path between the fear factor and FE. During trauma exposure, attention tends to be focused on the danger, generating fragmented and poorly contextualised memories which are hard to control (Brewin et al., 2010). Traumatized individuals are unable to control their flashbacks, yet by avoiding trauma triggers they can purposively decrease the probability of experiencing one (Brewin, 2014). That is, individuals with high levels of fear factor, which involves re-experiencing, hyperarousal and avoidance, tend to show low levels of FE because they may feel unable to face fall-related triggers. They may want to choose to avoid it to release negative sensations associated with it. In this context, FE refers to perceived specific and actual abilities to perform current activity.

#### 5.9.2.1.2.2. **Path II**

Path II refers to the direct relationship between dysphoria and FE – “constant falls-efficacy”. In that path, anxiety which develops over time as a result of falling, makes someone constantly worrying about being incapable of ever performing potential activities. Path analyses revealed a strong path between dysphoria and FE. It appears that dysphoria relates to FE impairment which has been reported before. Jiang et al. (2016) found that psychological distress predicted FE at 6 months follow-up among nursing home residents. Moreover, Rivasi et al. (2019) found that depressive symptoms were predictive of FoF development (assessed with a falls-efficacy scale) at two years, and suggested that a drop in FE occurred as a result of a burden of depressive symptoms. According to Benight & Bandura (2004), individuals with low self-efficacy tend to believe that they are unable to manage their threats and view many aspects of their environment as dangerous. They worry about potential threats and magnify them which consequently compromise their functioning (Benight & Bandura, 2004). In that sense, FE refers to perceived potential abilities to manage fall-related tasks.

#### 5.9.2.1.2.3. **Path III**

Path III relates to the indirect relationship between PTSD factors and FE via falls beliefs and FoF – “elaborated falls-efficacy”. In the path, one views their FoF in terms of their perception on the stability of the cause of their fall in a given context. Depending on the perception, one feels more or less fearful and consequently capable or incapable of performing the activity. It could be assumed that the fear factor and FoF would show some commonalities, yet one of the important distinctions between the two is the specification of fear. Fear, according to Barlow (2002), is a basic, adaptive and protective response toward a current, identifiable threat, thus FoF should always be maladaptive.

The last hypothesised path predicts the contextuality of the fear based on one's previous experiences. The belief that the reason why one fell would cause another fall is related to the controllability of falling in the future. One may attribute their falls to stable characteristics perceived as permanent (e.g. poor health) or unstable characteristics perceived as temporary (e.g. bad weather). Depending on the attribution, some situations may be perceived as controllable by an individual, or uncontrollable, or perhaps controllable by "fate" (Byrns, Agnew, & Curbow, 2002). In the model, such control beliefs determine the way FoF is experienced. That is, the less controllable the fall-related situation, the more likely FoF is experienced. FoF may protect one from undertaking the activity that may cause them falling which implies a positive role of FoF. However, excessive FoF may prevent one from doing something that may not necessarily lead them to falling; or too little FoF may result in undertaking relatively risky activities. In that context FoF is maladaptive. Given the contextuality of FoF based on one's previous experiences and attributions, in this path FE may be most closely related to one's physiological fall risk.

The analysis revealed that FE may have different facets, depending on what influences it. It can be situational and influenced by the fear factor (e.g. flashbacks). FE can also be a more stable characteristic of an individual when it is influenced by anxiety (e.g. constant worries). Interestingly, FE may also be more "elaborated" since one may consider their abilities in the context of their own experiences and whether they are able to perform some activities without falling. It is important to note here, that the model does not assume that only one path may be active in a given situation. Rather, one path may be more active than the others. Thus, the model suggests an interplay between the paths, which is influenced by situational cues.

#### **5.9.2.2. Self-concept following falls**

The present study revealed that the identity of older adults changed following their falls. They rated their present self-concept more negatively than their past self-concept. The difference was significant across almost all domains. Wright & Telford (1996) found a significant difference between past and present self-concept. Tyerman & Humphrey (1984) also reported that head injury patients rated their present self as more negative than their past self. The differences were found to be non-significant only on three domains. Similarly, this study found non-significant differences on only five of the adjective pairs.

It is important to note here that self-ratings can be influenced by contextual cues (Markus & Kunda, 1986). That is, the settings in which the assessment took place, might have influenced participants' responses. Patients who are hospitalised for several days may feel trapped and stressed (Xyrichis et al., 2018). Older adults may find the hospital environment distressful since it tends to be noisy and disorienting (Admi et al., 2015), which can cause annoyance, irritation and fatigue (Xyrichis et al.,

2018). Indeed, participants' perception on their present self-concept was significantly worse compared to their past self-concept in domains such as irritability, dissatisfaction, worthless, dependent, clumsy and lacking control. Such findings suggest that loss of independence and activity participation are more salient with respect to their pre-fall selves, than changes in domains such as being uncooperative, withdrawn or unfriendly, which relate to social interaction. It is in line with Hill (1992) who found that although the "active" self of individuals was greatly affected by a stroke, their "social" self was intact.

Interestingly, non-traumatised participants showed no difference between their past and future self-concept. It suggests that they did not predict their falls to influence their lives in the future. It is in line with Ellis-Hill (1998), who found that there were no statistically significant differences between past self and future self. Tyerman & Humphrey (1984) and Wright & Telford (1996) reported similar results. That is, non-traumatised individuals did not expect their falls to have long-lasting impact on their lives. On the other hand, traumatised participants believed that their lives would be affected by their falls in the long-term and their past self-concept was better than their future self-concept. Thus, they believed their lives would decline. This study found significant differences on six of the adjective pairs. That is, older adults expected to be more bored, unattractive, unstable, worthless, forgetful and dependent. They anticipated to be more dependent on others, and potentially, that was the reason why they expected to feel worthless. Self-concept and mood have been found to be highly correlated (Cantor et al., 2005; Carroll & Coetzer, 2011). Thus, PTSD symptoms experienced at hospital potentially triggered a negative outlook on older adults' future.

The semantic differential scale relies on retrospective ratings of pre-injury attributes, reports of self-concept change on the scale are susceptible to various biases. For instance, the "good-old-days" bias (Gunstad & Suhr, 2001) has been found to influence retrospective reports. It refers to people's tendency after a negative event such as injuries, to view themselves more positively in the past. They tend to underestimate problems encountered in the past, which in turn, overestimates problems after the event (Gunstad & Suhr, 2001). In support of this bias, individuals with traumatic brain injury have been found to rate their past self-concept as significantly better (Iverson et al., 2010; Lange et al., 2010; Yang et al., 2014).

### **5.9.2.3. Influence of PTSD on SOC**

The ability to develop and use SOC strategies as a personal resource is crucial in order to adapt to, and minimise the impact of losses (Freund, 2008). The present study revealed that SOC strategies were commonly applied by older adults. However, it is important to note here that rehabilitation was at an early stage for the majority of participants, and in some cases it had not yet commenced. For

this reason, it was unlikely that they would engage in various compensation strategies or loss-based selection towards the end of their recovery, as their functioning would be expected to progress.

Traumatised individuals applied significantly less SOC strategies to their recovery than non-traumatised participants. These findings suggest that the SOC ability is dynamic and mood dependent. It is in line with Weiland et al. (2011) who found a substantial decrease of SOC competencies associated with the presence of depressive symptoms. Moreover, Carpentieri et al. (2017) found that individuals with lower wellbeing reported fewer SOC strategies than people with high wellbeing. Furthermore, traumatised individuals might have less resources than non-traumatised people. Shrira et al. (2012) reported that traumatic events such as disability and victimisation were negatively associated with mental health among older, rather than younger, ages. The authors concluded that it may potentially relate to the increasingly shakeable balance between gains and losses (Hobfoll & Wells, 1998). In fact, one of the core drivers of PTSD is resource loss (Cohen et al., 2019). On the other hand, SOC can act as a regulator to mitigate the relationship between stress and daily challenges (Robinson et al., 2017).

Poor SOC competency is particularly alarming, since SOC allows for healthy and meaningful lives among older adults (Zhang & Radhakrishnan, 2018). SOC relates to higher levels of wellbeing and lower rates of depression, despite poor physical health and loss of some functions (Lang et al., 2002). A study in Croatia also found that individuals who are more persistent and single-minded, devoted themselves to the things they wanted to achieve (optimisation), and found alternative means or tried harder (compensation), if their usual ways of doing things were ineffective (Ambrosi-Randić & Plavšić, 2011). SOC also relates to improved anxiety scores, an increased ability to perform activities of daily living, and consequently better health outcomes (Zhang & Radhakrishnan, 2018a). Alonso et al. (2013) assessed the efficacy of a treatment program involving training in SOC strategies. One of the unexpected findings was the fact that in the intervention group there was no significant change in depression scores, while there was an increase in depression in the control group (Alonso et al., 2013). Thus, SOC competency might be protective from psychological distress, which could be particularly beneficial to traumatised individuals.

## **5.10. Summary**

PTSD was found to have much influence on older adults. Even though all participants reported changes in their self-concept after their falls, traumatised individuals perceived their future self more negatively than their past self. For non-traumatised participants their falls were not expected to make long-lasting impact on their self. They applied SOC strategies in order to cope with their rehabilitation. Traumatised individuals utilised significantly less SOC strategies than non-traumatised participants. Path analyses were conducted to examine the associations between falls-

efficacy and other fall-related constructs. In order to do so, two models were proposed. The first model based on the Multifactorial Causation Model of Falls and Fear (Hadjistavropoulos et al., 2011), showed poor fit and was therefore rejected. The second model proposed three pathways related to FE: at the moment falls-efficacy, constant falls-efficacy and elaborated falls-efficacy. The model showed good fit. According to the first path, symptoms of re-experiencing, hyperarousal and avoidance make someone fearful when faced with a present threat, resulting in maladaptive responses since one feels incapable of performing present activities at the very moment. In second path, anxiety which develops over time as a result of falling and it makes someone constantly worrying about being incapable of ever performing potential activities. In the last path, one views their FoF in terms of their perception on the stability of the cause of their fall in a given context. Depending on the perception, one feels more or less fearful and consequently capable or incapable of performing the activity.



## **6. Qualitative findings**

This study explored fall-related PTSD among older adults. Semi-structured interviews were completed with 11 participants in the first phase and 6 participants completed the follow-up interviews. This chapter reviews the findings of the study. The first section of the chapter presents demographic information which was acquired through the survey responses they provided at hospital and the semi-structured interviews. The second part of the chapter focuses on the themes which emerged from the data. The last section of the chapter discusses the findings.

Quotes are included from participants to provide the flavour of the overall response. They are referenced as follows: line number/interview (1 – first interview, 2 – follow-up interview), i.e. 444:1 refers to line 444 in the first interview. Comments in brackets relate to the explanation or the context, as well as pauses, laugh, tears and so on, i.e. [laugh].

### **6.1. Description of sample**

The sample for this study was composed of 11 participants. The group were made up of four male and seven female respondents. Their ages ranged from 65 to 91 years. All participants in this research study lived in the Greater Poland Voivodeship. The diversity shown within the study population is vast. Not only there were differences in age, gender and socio-economic status between the participants, there were also differences in the physical level of injury, and differences in individual and environmental characteristics (Table 19). Three females were widows. Most participants were retired and did not work. Only one participant did not report any health issue. For four participants it was their first fall and six participants fell at home. Four participants fainted as a result of falling, five participants got up without help, but one participant waited for help for hours. Six participants reported either lower or upper limb fractures. Hip fracture was reported by one participant, two individuals experienced head trauma and two respondents had injury to their back.

Five participants met the diagnostic criteria for (acute) PTSD according to the DSM-IV. The DSM-IV lists events that have the potential of being traumatic, including: combat, assault (sexual and physical), terrorist attacks, torture, natural disasters, automobile accidents, and life-threatening illnesses, as well as witnessing death or serious injury to another. Table 19 lists aversive events grouped in three timeframes – early life, midlife and late life.

	<b>Anna</b>	<b>Polly</b>	<b>Stephanie</b>	<b>Felicia</b>	<b>Betty</b>	<b>Henry</b>	<b>Jade</b>	<b>Michael</b>	<b>Carrie</b>	<b>Wayne</b>	<b>Bert</b>
Follow-up	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Age	86	71	91	82	65	66	68	67	71	67	65
Education	University	Primary school	Primary school	High school	High School	Vocational school	High school	University	High school	High school	Vocational school
Living alone	Yes	Yes	Yes	No	No	No	No	No	No	No	No
Widowed	Yes	Yes	Yes	No	No	No	No	No	No	No	No
Retired/ working	Retired/ no	Retired/ yes	Retired/ no	Retired/ no	Retired/ sometimes	Retired/ no	Retired/ no	Retired/ yes	Retired/ no	Retired/ yes	No/ yes
PTSD symptoms	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Potentially stressful events in childhood	Post-war expulsion	Loss of two children, sister's illness and death	Various war experiences, loss of a child witnessed her cousin's fall	Father's illness and death		Grandfather's disability					Poverty
Potentially stressful events in midlife					Head trauma	Leg amputation	Perforated stomach ulcers			Severed finger	Severed finger
Potentially stressful events in late adulthood	Death of a spouse, heart surgery and coma	Death of a spouse	Death of a spouse, sister's post- fall disability	Chronic illness	Friend's death		Witnessed a fall				
Health problems	"Too many", heart surgery	Surgically treated hernia, severe allergies, varicose veins	Heart surgery, frequent fainting, vision impairments	Kidney and duodenum problems, arthritis, chronic pain	Osteoporosis	Surgically removed leg	High blood pressure	Surgically treated cataract	Knee problem	None	Arthritis
First fall	Yes	No	No	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Fall at home	Yes	No	Yes	Yes	No	Yes	Yes	No	No	No	No
Help with getting up/how long waiting	Yes/ several hours	No/No	Yes/ less than one hour	Yes/ few minutes	No/ No	Yes/ less than one hour	Yes/ immediate help	Yes/ few minutes	No/ No	No/ No	No/ No
Fainted as a result of falling	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
Injury	Hip fracture	Hand fracture (1st fall). Head trauma (2nd fall)	Back - subluxation and luxation	Head trauma, knees dislocation	Spinal fracture	Leg fracture	Leg fracture	Foot fracture	Arm fracture	Foot fracture	Foot fracture

	<b>Anna</b>	<b>Polly</b>	<b>Stephanie</b>	<b>Felicia</b>	<b>Betty</b>	<b>Henry</b>	<b>Jade</b>	<b>Michael</b>	<b>Carrie</b>	<b>Wayne</b>	<b>Bert</b>
Surgery	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Immobility/ how long	Yes/ never mobile	No	Yes/ one month	Yes/ few weeks	Yes/one month	Yes/ 4-5 months	Yes/ 3 weeks	Yes/ one month	Yes/ one month	Yes/ 6 months	Yes/few weeks
Care after discharge /who	Some/ day care nurse	Some/ daughter	Some/ children	Yes/ husband and daughter	Yes/ husband and daughter	Some/ wife and son	Yes/ husband and daughter	Yes/ wife	Yes/ husband and daughter	Yes/ wife and son	Yes/ wife
Activity after falling	No	Cycling, work, exercises.	No	No	Nordic walking, exercises, dancing.	Exercises until recovered. Walking.	Exercises until recovered.	Exercises.	Exercises until recovered and cycling.	Work, exercises.	Work, exercises until recovered.
New health problems after falling	Injury- related pain	Dizziness, injury-elated pain, sleep problems	Injury-related pain	Injury- related pain	Dizziness, injury- related pain, jaw problem, sleep problems, high cholesterol and blood pressure.	Injury- related pain	Injury-related pain	Injury-related pain	Injury- related pain, ankle pain	Injury-related pain	Injury-related pain
Future plans		Carrying on working	Eye surgery		Physiotherapy, dancing, Nordic walking	Carrying on his life as it was before the fall	Eye surgery		Second knee replacement, physiotherapy, cycling		Work, retirement, hand surgery
<b>SOC strategies</b>											
Elective selection					Goal setting	Goal setting	Goals hierarchy	Goal setting	Goal setting	Goal setting	Goal setting
Loss-based selection						Goals adjustment	Goals adjustment			Goals adjustment	
Optimisation		Rehabilitation		Family support	Family support, rehabilitation, pain relief devices, seeking help and information		Family support, rehabilitation, diet	Family support, rehabilitation,	Family support, rehabilitation,	Family support, rehabilitation, pain relief device	Family support, rehabilitation
Compensation	Home help care		Crutch	Assistance from others	Substitute, assistance from others	Crutches, assistance from others	Crutches, assistance from others	Crutches, assistance from others	Crutches, assistance from others	Crutches, assistance from others	Crutches, assistance from others

Table 19. Summary of participants' characteristics.

## **6.2. Thematic analysis**

The overall thematic analysis resulted in four major themes categorised in three timeframes: participants' past lives, the event of falling and lives since falling. This was done in order to preserve the timeline of the occurrences to illustrate the chronology of the events. That is, the analysis reflected the journey older adults undertook, starting from their past lives, moving on to the fall occurrence and the life after falling. Each theme is discussed in the light of previous research. Socio-economic or historical context is provided where needed to provide the reader with a better understanding of a particular issue.

The theme "wounds from the past" relates to distressful events encountered earlier in life, that might potentially be related to the way falls were experienced by older adults. "The fall" includes two subthemes that include a metaphor of the fall experience – "the downfall" refers to the negative experience of finding oneself on the ground, and "fall into the medical world" alludes to finding oneself in a different, perhaps frightening and unfamiliar reality. After the fall experience, older adults find themselves trapped, to some extent, in a cage of their failing body. It is an unfamiliar body that is no longer reliable which precludes older adults from their regular participation in the world. That is, the world continues to move forward, while fallers' lives are on hold. The second theme relates to the psychological trauma. An older person experiences new and unfamiliar feelings, such as fear of falls, anxiety, arousal or distressful memories. After regaining some control over their lives, older adults attempt to escape the cage. They may want to return to their lives they used to live, or they may see it is as something no longer achievable.

### **6.2.1. Past life**

#### **6.2.1.1. Wounds from the past**

All respondents talked about adversities encountered earlier in life and some of them were potentially traumatic (APA, 1994). The events were grouped in three timeframes: early life, midlife and late life. That is, certain types of traumas are likely to occur at certain ages. For instance, events such as warfare, combat exposure, non-live birth pregnancy (Ogle et al., 2013), losing a loved one in war or witnessing close people fatally hit in an accident or violence (Shrira et al., 2012) are more likely to occur at young age. A summary of the events for each participant is provided in Table 19.

##### **6.2.1.1.1. Early life struggles**

Half of the respondents experienced stressful events at a young age such as war and post-war experiences, the death of a child, and poverty. Adverse events that occur early in life have a significant impact on behaviours, choices and social relationships that extend into adulthood (Foster et al., 2008), and tend to have detrimental effects on older adults (Colbert & Krause, 2009). Colbert

and Krause (2009) demonstrated that the younger a person at the moment of trauma exposure, the more likely they were to experience negative consequences in late life. Ogle et al. (2013) found that early life events which occurred with greater frequency, predicted greater PTSD severity compared to events that were more prevalent later in life. Thus, negative experiences encountered early in life persist into later life.

#### 6.2.1.1.1.1. **War and post-war struggles**

Stephanie, who was the oldest participant in this study, talked most extensively about her war experiences. Stephanie was 17 when the WWII started. Her father was captured by German soldiers who forcefully entered her family house. Since her father had a weapon, the soldiers tortured him in front of her and her family. Stephanie's father managed to escape and remained hidden in a chicken coop until the war ended.

The expulsion of Polish citizens started in the first month of the war (Chrzanowski, 2004). Greater Poland, where the village was situated, became a part of the Reichsgau Wartheland, which was anticipated to be a German province. Thus, Poles living in the area were planned to be expelled from their properties and ultimately exterminated (Szymański, 2020). Stephanie's family's properties were confiscated at that time. Stephanie and her mother became forced labourers for a German man who took over their property. Stephanie had rather positive feelings towards him, since not only her family members were not murdered, but they were not relocated:

A German man came and became the landowner. My father's mother was still alive. She died in 1940. He came and he lived here. He got married in 1940 and his wife moved in. We were so happy. They were deporting so many people but we stayed. His wife told me: "Your mother will cook and you will work". We were so happy. (19:1)

Stephanie worked very hard but once she fell ill:

My hands were worn out. My bones were out. I was not able to even hold a hairbrush. I did not go to work. I had my hands and arms bandaged by a doctor. I looked like a mannequin. I was so scared of the repercussions. But I was not able to stand that pain. (31:1)

She had to return to work immediately otherwise she would have been beaten up and refused food. She endured forced labour for the German family until the Red Army entered Poland in 1945:

Then the Russians came. We were so scared. Four Russian soldiers came in to our house. They entered our beds. (35:1)

The Red Army soldiers conducted many acts of violence (Merridale, 2006) such torture, robbery, humiliation and raping around two million women (Zapotoczny Jr., 2017). Stephanie did not

continue her story, since she became very upset and tearful. I did not ask further questions about the Red Army invading her home in order to avoid causing her more distress, therefore it remains unknown whether they performed any act of violence on her or her mother.

Anna was born in 1927 in Kalisz, a part of Greater Poland where Poles were severely prosecuted by Germans (Szymański, 2020). Anna did not talk about the war. After the war, Anna's family were expelled from their property:

We lived in a housing estate on the suburbs of Kalisz. Later [after the war] they took it away from us and made us move to the block of flats. It was a two-room flat. It was a shocking change. (24:1)

War-related loss of home and family members often results in uncertainty about the future, hostility and stigmatisation in the new environment (Weber-Newth, 2012). Expulsion during childhood has been found to have long-term consequences on people. Muhtz et al. (2011) explored PTSD symptoms among 502 individuals from the former German eastern territories who were displaced as children at the end of WWII. They found that 31.5% of participants reported full PTSD, and 33.7% fulfilled the criteria of partial PTSD. Individuals with full and partial PTSD showed depressive symptoms, poor quality of life and reduced wellbeing.

#### 6.2.1.1.1.2. **The death of a child**

The death of a child was reported by two female respondents. After the WWII the number of deaths of infants was very high. Approximately 11% of children under the age of one died in Poland (Szczyt, 2012), while in the UK the number was as low as 4% (Roser et al., 2019). Polly's two children died in infancy. She held doctors responsible for that. As Polly stated:

The child was misdiagnosed. We took it to hospital. Infection. Even the doctor came to our local surgery and wanted to contact me. Perhaps he was afraid. That maybe... if it had been in a different environment. But you know... village. It was not like... Maybe he was scared we could sue him. (45:1)

Stephanie did not explicitly talk about losing her child. However, my conversation with her son revealed that she only had two sons, while she talked about three children. The "little son" she was referring to must have died, possibly in infancy, since she did not mention his name. It was a story that Stephanie perhaps resisted telling since it was a sensitive subject. She used present tense to describe it. As Stephanie stated:

Johnny was born in 1952 and in 1949 I gave birth to my little son. And I got infectious arthritis. And the child is crying. And I am unable to move. I am only rolling my eyes. Everything stopped (...) They took the child to Pleszew, and they took me to hospital. I spent there three weeks. For the first two weeks I was only rolling my eyes. (84:1)

The death of the child relates to the loss of the parent's hopes and dreams for the future. Stephanie and Polly lost their first-born children and therefore they lost their expected parental role. The loss of an infant has been found to result in higher intensities of grief than the death of a parent (Wing et al., 2001). Bereaved parents can experience depression, anxiety, anger, grief and physical symptoms (Athey & Spielvogel, 2000; Scheidt et al., 2012). Symptoms can persist for years after the death of the child (Dyregrov & Matthiesen, 1991). Furthermore, it has been found that 17% of bereaved parents have experienced symptoms of PTSD one month after the loss of their child (Jind et al., 2010). Christiansen et al. (2013) demonstrated that PTSD persisted for up to 18 years among 12.3% of individuals who lost their children. Thus, the loss of an infant is a significant event with long-lasting consequences.

#### 6.2.1.1.1.3. **Poverty**

Poverty and financial difficulties were common early life struggles among participants. Stephanie and her husband faced many financial struggles for around a decade after the war ended. Another participant, Bert, experienced much poverty in his childhood. As he described it:

My childhood was not a happy one. My father died. My mother found herself a new husband. After she gave birth to my brother she divorced. She had some of his debts to pay. We were so poor. Sometimes we had nothing to eat. I was going to school hungry. I was coming from school hungry. It was not easy. (24:1)

Since Bert experienced childhood poverty, he worried about his financial situation later in life. This was particularly evident during the political changes in Poland when he lost his job and was unemployed for several years. He also did not want to retire since he expected a substantial reduction in his income. This is consistent with previous research which reported that early life poverty and food struggles were linked to higher levels of stress surrounding work and finances in adulthood (Anda & Felitti, 2004). Poverty has been previously linked to high rates of mental illness, particularly depression, anxiety disorders and PTSD (Golin et al., 2016; Lorant et al., 2003). Furthermore, food insecurity is related to poor clinical outcomes in several physical health conditions (Weiser et al., 2015), but also to a range of poor mental health outcomes (Whittle et al., 2019).

#### 6.2.1.1.2. **Midlife struggles**

Most participants did not talk about stressful events encountered in midlife. There were two participants who talked about their midlife struggles most extensively. Henry was diagnosed with a severe circulation problem which required a surgical removal of his leg. As he described it:

I have been receiving disablement benefits since 2000. The doctor stated that I was not able to work anymore. Before the surgery... They planned to unclog my

veins only. But... There were complications. The amputation had to be performed. [Pause] The first amputation was performed in January. The prosthesis was prepared in May. I was very distressed when they chopped off half of my foot. I could not get used to the fact that it was not there. But it was not enough. There were still complications. It was unbearable pain. They were giving me painkillers but they did not work. They said if they had continued to give me more medicines, they would have finished me. At that point it was indifferent to me if they chop off more of my leg. I accepted it. [187:1]

Amputation of a limb not only results in a loss of function and sensation, but also requires a revision of body image (Maguire & Parkes, 1998). It relates to functional and social adjustment problems and it is difficult to accept the fact of amputation and the new way of living (Tatar, 2010). Henry found it hard to accept the first amputation and he struggled with his new condition. He was under constant care of psychotherapists at hospital and he believed it helped him undergo the second surgery. According to Henry, the psychotherapy and the training he received at hospital prepared him for living with the prosthesis. He did not want to be limited by his disability and he felt confident to travel to Canada three years later. It is consistent with previous studies which showed that functionality played an important role in developing positive body image (Murray & Fox, 2002; Tatar, 2010).

Betty also discontinued work due to health issues. She was a nurse and she had an accident at hospital. As she stated:

I was very upset when I retired. I was a nurse for twenty years. After the accident I never returned to work. I was only 48. I was walking down the corridor and a man opened the door. And at that moment. He hit me with the door right in my forehead. My skull was fractured. I was wounded and fractured. It took me two years to recover. I was off sick when I was given an option to retire early. So I did. [88:1]

Betty seemed to find hard to accept her early retirement and she did not feel ready to finish her nursing career. Krzos et al. (2013) reported that 84% of 134 Polish nurses who took part in the study, had clear formal and informal plans for their retirement, including being socially active and caring for others such as grandchildren or a relative in need. Betty was not prepared for her retirement and she did not have any post-retirement plans prepared. Moreover, her injury and the two-years recovery precluded her from full participation in her usual activities. On the other hand, post-retirement active life has a positive impact on older women. Byles et al. (2013) found that active participation in social, religious, leisure and caring activities allowed older women for a smooth transition to retirement. This was however what both participants lacked in their retirement process.

Early retirement is associated with poorer mental health (Gill et al., 2006), and retirement due to health reasons is related to higher odds of having a high level psychological distress (Vo et al.,



2015). Dave et al. (2011) reported that involuntary retirement at younger age related to the greater decline in mental health compared to voluntary retirees. Midlife is associated with a zenith of social engagement and contributions to self and society are often at its height (Colbert & Krause, 2009). People at this stage express a need to create and nurture things that will outlast them (Erikson, 1959). They tend to involve in the community and have a need to be productive at work to develop a sense of being a part of the bigger picture. However, both participants were not prepared to disengage from their work and careers, so their transition to retirement was sudden and unexpected. Thus, early retirement due to health limitations may have detrimental effects on older adults.

#### 6.2.1.1.3. **Late life struggles**

Older adults often experience many potentially stressful events such as the deaths of spouses and close friends, retirement, or diminished physical capacity (Davison et al., 2006). Late life adverse events may have particularly severe consequences for older adults. Shrira et al. (2012) demonstrated that trauma experienced after the age 50 was most consequential for mental health in older age. That is, a single traumatic event was associated with lower mental health more strongly among older, rather than younger, adults.

The severity of PTSD in older adulthood tends to vary by event type. Shrira et al. (2012) reported that self-oriented adversity (which primarily affects the self), rather than other-oriented adversity (which primarily affects the others), was negatively associated with mental health among older adults. Such events included disability and victimisation which suggests that late-life trauma may disrupt the increasingly challenging struggle for maintenance of well-being. Participants of the current study reported life or health threatening diseases and surgical which either saved their lives or prevented disability, and widowhood.

#### 6.2.1.1.3.1. **Life threatening health occurrences**

Anna had a heart surgery 8 months prior to her fall. She was in a pharmacological coma for three months:

I was in a coma for so long. Three months. It was not easy for me. And it still is not easy for me. To even remember that time. (...) I had the surgery in March. I returned to Kalisz in August. I was away all this time (...) Ah, it all added up to my anxiety I am having now. I do not know... what will happen. Time will tell.  
(86:1)

Felicia had a heart attack which resulted in a surgical treatment. She also had problems with her kidneys, duodenum and arthritis. She experienced much pain which was beyond her control. She was prescribed morphine-based medicines:

I have adenoma on one kidney. Cystitis on the other. I do not know what bothers me more. (...) I want to have them scanned. (129:1)

I have a problem with duodenum. My entire belly aches. (...) I do not know if there is devil inside me. (117:1)

Jade was diagnosed with a cataract several months after her fall. This triggered her narrative about previous health problems at the follow-up, which she had not mentioned in the first interview. Jade talked about her health problems in terms of death, as she had been almost given a new life after the health issues resolution. As Jade stated:

I have died two times already. The first time I died when I had ovarian cysts. I was in so much pain. My entire belly ached. My back ached. I had a surgery. (1489:2)

The second time I died when I had stomach ulcers. I did not even know I had them. I had pain... You know... But I thought it was because of stress. One night I choke. I was choking. I was asleep. My husband is shaking me: "Wake up! Wake up!". My ulcer broke. I was almost gone. (1532:2)

Surgery is a difficult time for the human being. Despite the constant technological innovation and increase in the quality of interventions, surgeries can generate significant levels of anxiety (Vaughn et al., 2007). Furthermore, type of surgery contributes to pre- and post-operative anxiety. For instance, peptic ulcer treatment related to increased anxiety among women (Karanci & Dirik, 2003). However, certain personality characteristics may contribute to both the development of ulcers and vulnerability to anxiety (Karanci & Dirik, 2003). Similarity, heart surgery has been linked with increased rates of depression and anxiety, which are well-recognised cardiovascular risk factors (Pignay-Demaria et al., 2003).

#### 6.2.1.1.3.2. **Widowhood**

Anna, Stephanie and Polly were widows. However, they did not explicitly talk about the death of their husbands. Only Polly occasionally mentioned the death of her husband:

So some say: "He [Polly's husband] died too early" but he did not need anyone. He did others a favour! (258:1)

He was independent almost to his last day. Only at the end he needed some help. But not like he needed diapers or something. [Pause] No. But it did not last long. And then he was gone. (301:1)

It appears that spousal bereavement was a story the females resisted telling since it was a sensitive subject. In fact, the death of a spouse is known to be one of the most significant loss events affecting adults (Holmes & Rahe, 1967). Widowhood has been associated with worse mental, cognitive, functional health (Vable et al., 2015), and elevated risk of mortality (Shor et al., 2012). For a

minority of older adults, quality of life and mental health are severely impaired for many years after the death of the spouse (Prigerson et al., 1996). Ott et al. (2007) reported that although approximately a third of spouses adjusted relatively well to the challenges associated with their bereavement, one out of every six experienced a long and difficult bereavement.

Widowhood presents a particular set of emotional challenges. Utz et al. (2014) found that greater social support, especially coming from friends, was associated with lower levels of loneliness and higher levels of emotional wellbeing. However, Stephanie, Polly and Anna lived alone which affected the level of social support they received. Moreover, Anna stated that she did not even want to see her old friends. Thus, widowhood poses a major challenge to older people's lives, especially if limited social support is offered.

## **6.2.2. The fall**

### **6.2.2.1. Fall from the normality**

The theme corresponds to the concept of biographical disruption. That is, injurious falls relate to sudden changes in the body which involve an alteration in the person's life situation and social relationships. The suddenness of falling results in feelings of shock and exposes an older person to a potentially damaging loss of control. The fall has a potential to impact an older person's future health, independence and wellbeing. It may relate to negative long-lasting consequences, such as immobility, prolonged dependence, reduced quality of life and decreased personal control. Thus, the changes caused by falls may separate older adults from who they were in the past and who they will be in the future (Bury, 1982).

#### **6.2.2.1.1. The downfall**

The subtheme "downfall" relates to the suddenness of falling and negative sensations caused by it. The experience of falling is conceptualised as the downfall to underline the experience of an older person finding themselves on the ground and negative consequences related to it. A fall happens in the space of a split second. Fallers are in pain, often confused and trying to get up. They attempt to understand what happened, assess their injuries, and judge whether they need medical help. Thus, the subtheme relates to falls attribution, negative sensations related to falling and help received immediately after falling.

All participants were able to attribute their falls to a particular cause. Most participants attributed their falls to their hurrying manner or carelessness, or a problem with the physical environment. They considered falls as any other accident in life. It was particularly evident in Carrie's fall story when she talked about all injurious falls she had encountered earlier in life:

I had many falls. When my daughter was fifteen years old. It was when I was on a motorbike. I injured my arm. The same one as the last time. I also twisted my ankle at work. I broke my arm. I tripped. I was falling. I went to hospital. I had a plaster. And then rehabilitation. (56:1)

Since most participants used simple and straightforward explanations regarding their falls, it may suggest their lack of understanding of the possible causes of falls. Kong et al. (2002) found that over half of the respondents explained their falls in terms physical environment or not being cautious. They refused to think of other possible reasons, which the authors interpreted as a self-comforting strategy that older adults applied in order to enhance their perception on the controllability of the fall situation, reduce their fear of uncertainty and feelings of being powerless. However, it appears that participants in the present study were not aware of the problems of falls among older adults, since they did not consider falls as an age-specific problem. In fact, none of them attributed their falls to the ageing process, which may relate to the fact that falls are a neglected problem in Poland. Polish public payer – National Health Fund does not recognise falls as a separate issue which requires certain prevention and treatment strategies (Kłak et al., 2017). As a consequence, healthcare staff do not provide much fall-related information to older adults. In a study conducted on 304 seniors in Poland, it was found that  $\frac{3}{4}$  of participants did not know how to reduce their fall risk and required fall prevention guidance (Kamińska et al., 2017). Thus, seniors in Poland are not aware of the problem of falls and do not tend to link their falls with age, but they treat them as any other accident in life which is likely to happen to anyone, regardless their age.

Falls relate to various negative sensations. All participants talked about much pain they suddenly experienced. Betty fractured her back and reported much pain:

I lifted the box. When I was in the greenhouse. And somehow my hand slipped. I fell. The pain was enormous. I was calling for help. But it was so noisy. The machines were loud. I was calling for help. Nobody heard me. (53:1)

Bert described negative sensations related to his fall:

I realised I was going down. I was down with a bound. The fall shook my whole body up. To the core. The feeling stayed with me for a while. It shook me up. Then I realised my leg was crooked. (178:1)

Several participants fainted as a result of falling. They were thrown into a state of confusion and isolation. They tried to make sense of what had happened to them that led to and during their unconsciousness. Polly passed out after falling and when she woke up, she was terrified. She thought she might have died:

I felt my head being crushed. Jesus! Holly Mary! I will not get up. Did I kill myself? No! I am conscious. But this feeling... (...) It was a terrible experience. I had a broken head. (110:1)

Almost all participants turned to their family or friends for help after falling. Half of the respondents required help with getting up. It was usually family members who assessed the level of injury and called an ambulance, or provided transportation to hospital. Felicia had a fall at home. She passed out as a result of falling. As she described it:

I went to the bathroom. I tried to sit down. I do not remember anything else. When I woke up my legs were pulled up. And I was looking around blindly. I am shouting: "Marek! Marek!". My husband came in. There was so much blood. He tried to lift me up. But I was 93 kilograms. He was not able. He called our daughter's boyfriend. He came and wrapped a towel around my head. They made me sit on a chair. I felt so noxious. Still noxious. They called 112. They came and took me to hospital. (657:1)

Polish families are generally considered prepared for providing first aid and care for older adults (Kamińska et al., 2017), which may explain the tendency of older people to seek help from their families even when their relatives were not present at the time of falling. Polly had two falls and she sought help from her daughter at both times. Polly's first fall resulted in a wrist fracture. She asked her daughter for help:

She [Polly's daughter] asked me: "Does it hurt much?". I said: "It burns more than it hurts. I think it is broken". She said if I could handle it we would go in the morning. I said: "Not in the morning! It can get swollen in the morning and what will I do?". So we went to hospital and my hand was getting more and more swollen. I was not able to take off my wedding ring. (191:1)

Polly gave an impression that she had felt ignored by her daughter. Polly had another fall and also asked her daughter for help. As Polly narrated:

I am telling her: "Call an ambulance!". She says: "You must be joking. Let's go to the surgery first. Let them see you. Maybe there is no need to go to hospital". [Pause] So I went. I went to the reception and I am telling them this and that. Someone calls a doctor. He says: "Call an ambulance". They took me in immediately. (221:1)

The fact that some family members may not give enough importance to their older relatives' falls, may potentially relate to their unawareness of the problem of falls among the elderly. They may not be aware of the severity of physical and psychological consequences of falls. That is, not only older adults in Poland are not aware of the problem of falls, as it has been shown previously by Kamińska et al. (2017), but it appears that their relatives and carers may lack the knowledge on the issue.

#### 6.2.2.1.2. **Fall into the medical world**

All participants of the current study experienced injurious falls which required medical attention. In this subtheme, participants described the process of hospital admittance, the challenge of diagnosis and hospital stay. These are presumably distressful events for seniors since they suddenly find themselves in potentially unfriendly and frightening place. The sudden and drastic change of environment can often increase the anxiety fallers experience.

The hospital admission can be disorientating and disruptive for older patients. Several participants of the current study faced the problem of prolonged time admittance due to excessive wait for diagnostic imaging. Prolonged time admittance is a major problem in Poland. The efficiency of emergency departments is one of the lowest in the EU and patients wait approximately three hours before seeing a physician (Björnberg et al., 2017). Leźnicka et al. (2014) reported that prolonged admittance was one of the most common complains among patients in Poland. It is particularly alarming since delay to admission is related to treatment delays and increased mortality (Morley et al., 2018). It affects patients' satisfaction which in turn impacts their further use of medical services and their health condition (Majchrzak-Kłokocka et al., 2012).

Stephanie reported waiting on a stretcher for several hours to have diagnostic imaging performed, since scheduled tomography scans were prioritised. She was in much pain:

I spent all day in the emergency department. And I laid down on that board all day. They thought my back was cracked. But there was no scanner. It was all full. And I waited and waited. Johnny [Stephanie's son] came. It was around three in the afternoon when they scanned me. I was not able to sit. Or nothing. It hurt so much. (323:1)

This description illustrates the difficulties older adults face in emergency departments. However, Stephanie endured the situation without complaining, even though she was in much pain and had to wait for the assessment. Perhaps, she was grateful for the fact she was at hospital where she would get help. During the war, when she fell ill, she was desperate to get help and she risked being punished for skipping her work. Potentially, that experience enhanced her gratitude for having medical help available whenever she needed it.

Stephanie was not given any pain relief medication and waited patiently for hours to see a physician. It was not until her son arrived when she was diagnosed. This highlights the importance of family acting as advocates for older adults. It also appears that older adults expected their families to be their advocates at hospital. Polly was disappointed that her daughter did not ask health professionals to perform further examination on her. After her first fall, Polly was sent home without being diagnosed with a fracture. She returned to hospital one week later and insisted on having diagnostic

imaging performed which showed that her wrist was fractured. After her second fall, she had no scan performed and she was sent home. She continued to feel bad, returned to hospital and insisted on having diagnostic imaging performed which revealed that she had a concussion. Polly felt ignored by her doctor:

I saw a doctor and he treated me... Maybe... Like a toy. (...) My daughter treated me... Like I was... Exaggerating. Right? I was sick! I had my head broken. (291:1)

Polly had previous negative experiences with healthcare professionals which might have influenced her mistrust in doctors. Two of her children died as a result of being misdiagnosed, therefore she found hard to trust the diagnosis she had been given, especially that she continued to feel bad. Polly felt unheard and objectified by her doctor. She also felt let down by her daughter since she did not act as her advocate and disregarded her health complains.

Felicia also faced problems of not having diagnostic imaging performed. As she stated:

I am already old. Why would anyone do something for me with bad grace? I would rather die here at home. I am waiting for my death. Here at home. I will not go back to hospital. Unless they scan me. I am already in severe pain (677:1).

Felicia did not explicitly state that she had been mistreated, yet she talked about being treated “with bad grace”. It suggests that Felicia did not want to insist on being examined since she expected negative attitude from the hospital staff and resistance for further examination. Negative attitudes towards the elderly held by healthcare professionals have been previously documented (Higgins et al., 2007; Oyetunde et al., 2013; Polat et al., 2014). Older patients tend to be stereotyped and marginalised by healthcare staff and ultimately older adult care is perceived as burden by nurses (Higgins et al., 2007). Polat et al. (2014) found that hospital staff, despite overall positive attitudes towards older adults, perceived older patients as inflexible, weak and disabled.

Once admitted to hospital, most patients moved within the hospital system from emergency departments to another ward. It can increase the anxiety older adults experience since the older patient finds their surroundings change again. Hospitalisation can be a very distressful event for an older person. Patients who are hospitalised for several days may feel trapped and stressed (Xyrichis et al., 2018). Seniors may find the hospital environment distressful since it tends to be noisy, sensory and socially deprived, and disorienting (Admi et al., 2015). Noise alone can cause annoyance, irritation and fatigue which affects patients’ ability to rest, heal and recover (Xyrichis et al., 2018). Kos et al. (2016) reported that only less than 10% of older patients in Poland considered noise levels satisfactory. Participants of the current study found the hospital environment distressful. Henry, who previously had spent over a year at hospital, still considered it distressful:

It is a different world. Everything is rushed. One surgery after another. People come and go. Like a bus station. Imagine sleeping at the bus station. There are always people around. You hear everything. Other patients. Visitors. Machines. The staff. Even the street. (511:1)

Majchrzak-Kłokocka et al. (2012) demonstrated that nurses have a big impact on patients' satisfaction from their hospital stay. Patients in Poland who receive help with basic activities tend to feel safer and more comfortable at hospital (Majchrzak-Kłokocka et al., 2012). Several participants reported examples of polite verbal interaction with nurses. It is in line with previous findings of Pękacz et al. (2019), who reported that hospital satisfaction among patients in Poland was positively correlated with age. Carrie, who spent much time at hospital due to her fall injury and planned knee replacement, was particularly pleased with the care she had received and emphasised the impact that nurses made on her recovery. She expressed genuine gratitude for the help and support she received from nurses. As Carrie narrated:

They were so helpful. I was taken care of. There were good nurses. They were bringing me stuff. Helped. One nurse was so good to me. I lost my appetite. I did not want to eat. She told me: "Your results are so good. You need to eat. You will make yourself weak.". I struggled with eating. I could not move my arm. She said: "You have to eat". And she was feeding me (497:1).

Most participants expressed great respect for the nursing profession. Older adults who felt satisfied with their hospital stay, spoke most fondly about nurses, and described them as polite and respectful towards patients. It is consistent with Rabiasz et al. (2018), who reported that for hospital patients in Poland, a nice approach was the most valued feature in nurses. Nurses are in closest contact with patients due to the nature of their profession and play an indisputable role in developing patients' satisfaction with healthcare (Przychodzka et al., 2016). However, several participants were dissatisfied with their hospital stay which was related to their disappointment with the care they had received from nurses. Some participants felt unheard by nurses and considered them rude and unprofessional. Betty was particularly let down by one nurse, as she stated:

She [nurse] was giving me injections while I had a PVC. I told her I had a PVC and she could easily use it. She said she had prepared an intramuscular injection and she did not want to change it. She told me to turn. But I was not able to turn. My back was fractured! (...) She pushed me violently and turned [Tears] And she hit me with that needle. (...) I asked her: "Why are you hurting me?". I felt like an object. Not a human. (334:1)

Patients' hospital stay satisfaction is related to individuals' expectations, values and previous experiences (Kos et al., 2016). Betty was a retired nurse and she valued her profession. She was very disappointed with the quality of the care she had received and considered it unacceptable practice. Betty felt dehumanised and objectified. Nursing involves caring for the "whole person" and it is



inappropriate for nurses to objectify patients (Scott et al., 2014). Patients in Poland often report that they would like their nurses to be kind, understanding and interested in them, and complain that the care they receive is strictly medical which does not address their psychological needs (Wasilewski, 2008). This is in line with the traditional view on nursing as different from medicine where adopting reductionist biomedical models are inappropriate and considered dehumanising and reductionist (Christensen & Hewitt-Taylor, 2006). It is important for patients to not only receive help with basic activities, but also to feel encouraged by nurses to perform the activities (Majchrzak-Kłokocka et al., 2012). Kamińska-Rosner & Zdun-Ryżewska (2013) found that Polish patients who spent more time talking to nurses, were less annoyed and more satisfied with their hospital stay.

Several participants felt left down by nurses since they were poorly informed about their condition and what might happen to them. Jade had her surgery postponed twice and held nurses responsible for that. As she stated:

She [nurse] told me I would have a surgery later that day. I did not have it done. The next day they brought me lunch so I ate it. Then the nurse came and asked me if I was on an empty stomach. I was not. She talked rudely to me: “Why did you eat? You had a surgery planned.” Nobody told me that I should be on an empty stomach. Why did they bring me lunch then? (215:1)

Poor provision of information is an often complaint among hospital patients in Poland. Kos (2016) found that although 90% older patients of five hospital wards in Poland were rather happy with the care their received from nurses, they were the least satisfied with provision of information and the time devoted to patients. Leźnicka et al., (2014) reported that 22% of patients were uninformed about the procedures performed on them. Gaweł et al. (2008) found that 32% of Polish patients believed they were ill-informed about their hospital stay and condition. Leźnicka et al. (2014) further explored the aspects related to information provision to patients and found that participants felt poorly informed in terms of their rights, side effects of medications, daily timetable and ward functioning rules. It is particularly alarming since poor information provision is related to patients' enhanced annoyance and decreased hospital satisfaction (Majchrzak-Kłokocka et al., 2012).

### **6.2.3. Life since falling**

#### **6.2.3.1. Body as a cage**

The theme “Body as a cage” refers to limitations and negative sensations that older adults experienced after hospital discharge. Fallers returned to their homes and attempted to continue their lives. However, their failing bodies often precluded them from undertaking their usual activities which affected their daily routine. The body structures our experience (Gallagher & Zahavi, 2008). That is, there is no experience that is not bodily. When an individual is faced with an injury or any

other health problem, the status quo of the body becomes disturbed and consequently that participation is compromised. One becomes alone with one's body and to be alone is to be alone in oneself. The body is "felt" to the greater degree than in the absence of health problems. Healthy individuals take many aspects of their participation in the world for granted. When people are faced with health issues, their perceptual lens shifts on previously overlooked aspects drawing attention to them. Thus, after older adults fall, they enter the new reality where their bodies, at least temporarily, may compromise their participation in the world.

#### 6.2.3.1.1. **Suspended in time**

The subtheme "suspended in time" relates to the time after falling where life continues to move forward without the faller's active presence in it. The shock of sudden immobility left the individuals suspended in their failing body. Older adults suspend their activities, plans and social relationships in order to cope with their fall-related injuries. The world around them continues to move on, while they have to wait for their bodies to allow them for reengagement with the world. Their world becomes downsized and limited to certain places, people and activities. Older adults who return home from hospital, enter this new world, new reality in which they need to relearn how to function, given their limitations.

Several older adults had precise plans for their future which were disrupted by their falls. Michael's financial situation was heavily affected by his fall. He planned to go abroad with his son to work for a couple of months, which he had to postpone after falling. His son went abroad without Michael which made him upset. As Michael stated:

To tell the truth I am a little embarrassed. I like being active. Working. Doing stuff. I have always found a way. And now I am embarrassed. I am cut off now. Out. From that. From my activities. (99:1)

Participants often talked about their immobility affecting their daily routine and the inability to go outside. Bert compared his injury to being imprisoned. As he stated:

I feel like a prisoner here. On this sofa. I wake up in the morning. I sit here. My wife goes to work. And I stay here. [Pause] When I think about the things that need to be done. I need to think about the farm. It will not get done by itself. [Pause] You know how depressing sitting on the sofa is? Being stuck in these four walls? When I was tired after work I could think this is paradise. Sitting all day and resting. Watching TV. But now when I have it [Pause]. I cannot stand it. [221:1]

Bert felt as being taken captive by his injury. He was not able to continue his regular activities and he felt trapped because he was aware of his responsibilities. Bert knew that nature works in cycles and it would not stop because his life was temporarily disrupted. His fields needed to be prepared

for planting and he worried it would be done too late. Thus, Bert's fall not only affected his life, but also his surroundings that he felt responsible for. Given that his financial situation was one of the major concerns in his life since his childhood, it can be assumed that not being able to take care of his farm, which was another source of his income, made him distressed.

Henry's wife was severely ill and she needed to be looked out for, which made Henry feel frustrated and helpless. As he stated:

This now is far worse [than the amputation]. Because I walked. I knew that the leg would not grow back. Psychologists prepared me for that and I accepted it. The first amputation was upsetting but the second one I accepted serenely. I knew it was necessary. But this? I walked! And now I have to stay at home again. (...) Now this ineptitude kills me. (457:1)

It was hard for Henry to be unable to help his wife, while she struggled with not only her disability, but now also his. The change of role from carer to care recipient and the subsequent shift in the dynamics in the relationship can be a difficult transition. It can amplify the loss of independence so that the person's sense of self may feel diminished (Henderson, 2001). Henry compared his situation to his grandfather's disability:

The other day I told my wife that I know what my grandfather felt (...) He was always so active. He was never home. He had breakfast and went out. He was coming home in the evening. And after the accident he had to stay in bed for one year. He was going crazy. He was not able to just lay down. (...) His hart was not able to handle it anymore. Now I understand him. This is not what one wants. (356:1)

Henry underwent two surgical treatments several years prior to his fall. He was provided with psychotherapy at hospital and while it was not easy for him to accept the first amputation, the second surgery was much less distressful for him. He accepted his condition and learned how to live the rest of his life with his changed body. Henry felt his post-fall situation was worse than his leg amputation. The unexpected fall disturbed his status quo. It caused him another life change which resulted in sudden immobility and inability to perform many things he had learned to do after the amputation. Henry used his grandfather's disability as a way to express his own feelings of "going crazy". Henry's grandfather was an important person in his life, and not the experience of the amputation, but the fall experience made him understand what his grandfather had gone through.

The inability to perform many activities was very distressful for the males. They seemed to hold traditional views on gender roles according to which men are the main providers. Older men who were unable to work or perform typical "manly" jobs such as repairs or yard work, had a need to

help their wives. It is in line with previous research which reported that men whose income decreased, increased their housework (Bittman et al., 2003). As Michael stated:

I had a plaster on my leg. I was moving so slowly. I was able to go to toilet only. I wanted to be helpful. To help my wife. I was doing housework. Whatever I could do in a sitting position. I helped my wife cooking. I chopped. I mixed. I made salads. (99:1)

The inability to perform previously valued activities related to much frustration, which was commonly experienced by older adults. For Anna, cooking was an activity which she found particularly important. As she narrated:

I am feeling awful. I am unable to do anything! I am struggling with pretty much everything. For someone who is used to work, housework it is... [pause]. It is just awful. I am not able to go to the kitchen. I will not turn on the stove. Because I do not have the strength. (45:1)

Anna was used to her independence and daily routine. After falling, Anna was immobile and faced many struggles. Such a dramatic change in circumstances can be an enormous adjustment which can have significant effects on the dignity of independent older people (Woolhead, et al., 2004). Anna talked about cooking which appeared to be an activity she valued. Cooking is different from food which relates to basic needs of every human. Cooking has powerful meaning to people of all ages which is connected to feelings of love, pleasure and enjoyment (Buettner et al., 2011). For most of today's older adults, women are the traditional cooks and heads of the kitchen in the family (Buettner et al., 2011). Not being able to cook perhaps made Anna feel separated from the comfort cooking provides, an important part of her daily routine and the role of a hostess to her guests.

Anna's injury affected her social life. She did not receive many visitations from family and friends and had reduced contact with others in general. The contact she had with her nurse was her only regular contact with another person after her fall. She felt separated from the world but she did not want to engage with it. As Anna stated:

I am feeling separated from people. What can I say? [pause] I am not looking back. For my friends. I am not seeking out for people. I am so annoyed. Everything annoys me. [What makes you annoyed?] That others walk and I do not. (205:1)

Presumably, Anna did not want to see people since others were not in the same condition as her, and she did not want to be reminded of her immobility. While others carried on her lives, Anna's life was on hold. Perhaps Anna felt alone with her problems and she did not expect to be understood by others, since they lived their lives without injuries and capable of performing things that she was not able to do. Anna entered a new world and social reality, and it might be difficult for other people

who live their own lives, to appreciate the changes and challenges facing people living with severe injuries (Ellis-Hill et al., 2008)

Although discussing traumatic experiences within trusting and understanding environment has been found to boost self-efficacy and promote healing (Blackburn & Owens, 2015), Anna did not want to talk about her experiences, even though she had talked about them at hospital. It appears that it was easier for her to accept being taken care of at hospital, which she perceived a temporary and unusual situation, but she became uncomfortable at her home since she was no longer capable of managing her daily life.

#### 6.2.3.1.2. **Dependence**

The subtheme “dependence” refers to the inability of older adults to take care of themselves and the need to rely on others who were in control. It relates to the immediate post-discharge period when older adults depended on others in order to be able to function. The subtheme involves older adults’ feelings about the need to receive help, as well as the help that they received from their carers.

Most individuals were taken care of by their relatives. The only exception was Anna, who was a widow and her only son lived in another city. After hospital discharge, she was left alone with her immobility and no formal care was offered to her. There is much shortage in the provision of care for older adults (Kouvonen, 2018). In Poland, care for the elderly is seen as a family responsibility and around 80% of all caretakers in Poland are family members (Golinowska et al., 2014). Nearly 20% of the low-level local administration units do not provide elderly people with any home care services despite having the obligation to do so (Kouvonen, 2018). Thus, Anna’s only option was to find a day carer which caused Anna much anxiety since for several days she was unable to find anyone willing to help her.

Individuals who were taken care of by their relatives, accepted and appreciated the situation. Previous studies have shown that the primary factor in recovery from adverse situations are relationships that provide care and support (Flannery, 1990; Stephens et al., 1997). Kong et al. (2002) found that older adults valued acts of concern from their relatives and reacted positively to their care. Most participants in this study felt good and happy about being taken care of by their relatives.

As Jade described:

I am comfortable. I do not have any duties now [laugh]. My husband is at home. He can now serve me [laugh]. It is good to be together. He cannot just go to the garden and spend all day there. Now he has to take care of me. (177:1)

Jade did not seem to perceive her immobility and inability to carry on with her daily routine as limitations, but rather as an opportunity for her to be taken care of by her husband. It appears that

the situation was quite unusual in their lives. In fact, women in Poland are traditionally perceived to be responsible for provision of care to others (Kamińska et al., 2017). If men fall, their care is provided by their wives, but if women fall, they may have problems with obtaining care from their husbands, who may be unskilled or even reluctant to do so. Jade's husband was very supportive, yet he lacked the skills, as Jade stated, which created numerous humorous situations that they both laughed at.

The care provided by relatives included a number of responsibilities such as personal and medical care, household management and rehabilitation. Wayne's recovery was a long-lasting and complicated process which required much help from others. He was supposed to be visited by a nurse every day to change his patches, which did not happen. Since his foot had to be disinfected on daily basis, Wayne's wife took the responsibility of changing his patches. As he described it:

My wife is helping me a lot. She brings me my medicines. She changes my patches. This is not a regular cast. There are screws out. One hundred of them. They have to be disinfected. My son comes and helps me clean myself. (88:1)

Some recipients of help fully relied on the care they received. Felicia relied on her husband, as she described it:

My husband does everything for me. He cooks. He cleans. [Pause] I do nothing. This is all my husband's work. I do not do anything. (543:1)

Felicia's husband was unhappy with the situation and worried she might never be active again. According to him, Felicia gave up on her life. He was very supportive, yet she did not want to do anything since her discharge from hospital, which made her husband worried about her. Other respondents expected more support from their relatives. Polly was disappointed with the care she received from her daughter. Daughters are traditionally believed to be the best caregivers for their mothers (Kouvonen, 2018). Perhaps Polly expected to receive more support from her daughter. Polly was not supposed to be alone, as her doctor advised her. However, she was often alone and had to manage many activities of her daily life without help. Polly also did not receive help with commuting to hospital, which was around 30 kilometres away from her home. As Polly described the experience of going to hospital:

I left there [hospital] and felt so sick. Delirium. It was like a windmill in my head. I went to a pharmacy but I felt so sick. What would I do? I am calling my daughter. She told me to go to my friend [who lived nearby]. So I went. But on the way I am saying to myself: "Why did I leave? I was living in Gehenna [i.e. very dramatic, traumatic or painful experience]. (767:1)

Key to her decision was that there was nobody to help her and so she felt she had to go on her own to hospital. In some situations, an inability to receive support may be why people take risks. Polly

saw there was nobody to do things for her. Thus, she had to remain independent and this led to her decision to complete daily tasks herself. She openly admitted that she wanted to receive more support from her family. Such strong desire for care from relatives is common among Poles. Post WWII industrialisation did not have a positive influence on the social infrastructure development, since economic goals were prioritised over social goals (Golinowska et al., 2014). Moreover, the Catholic church promoted taking care of older adults at home and other form of care (day care nurses, institutionalisation) as unethical and destructive (Golinowska et al., 2014). In fact, 76% of older adults in Poland prefer a form of informal care, compared with 23% in Denmark (Kraus et al., 2010). Thus, older adults often expect their family to take care of them.

#### 6.2.3.1.3. **Unavoidable pain**

The subtheme “unavoidable pain” relates to the experience of physical pain experienced after falling. Falls are stressful events which involve extreme pain. Management of post-fall pain was often adequately performed at hospital. However, pain became most challenging after hospital discharge since constant medical care was no longer available. The subtheme involves older adults’ experience of pain and the influence of pain on seniors’ lives.

The most common pain-related complaint was sleep disturbance at night. Older adults struggled with making themselves comfortable in bed since their body was in pain. Carrie, who underwent upper and lower limb surgeries, was in much pain which was particularly problematic at night. As she stated:

When I turn on my left side my leg hurts. When I turn on my right side my arm hurts. There is no way to escape it [pain]. I take painkillers to be able to sleep. But still... I wake up. (352:1)

Henry was in much pain. He was unable to sleep and he occasionally took high doses of medicines to be able to sleep:

I could not sleep at night. The doctor gave me medicines. I took painkillers and sleeping pills. Then I was not taking them for 3-4 days. I was saving them up. I was taking them all at once so I could sleep at least one night a week. (...) Now I sleep better. Like four hours. (...) I am not tired. This must be enough for me. (478:1)

Older adults who undergo unplanned surgeries due to their falls, are at higher risk of greater pain (Bowman, 1997). Individuals with pain often report sleep problems (Ohayon, 2005). Postoperative sleep disturbance is very common among older adults (Duggleby & Lander, 1994). Seniors are more prone to develop postoperative sleep problems since ageing is associated with sleep structure changes (Chung, Liao et al., 2014). Sleep problems are highly problematic since satisfactory sleep

is restorative and fundamental to wellbeing (Karni et al., 1994). Poor sleep quality has been found to predict not only pain but also fatigue, poorer physical and psychosocial functioning (McCracken & Iverson, 2002). That is, there is a bidirectional relationship between pain and sleep quality (Tang et al., 2015).

A recurring thread amongst several women was how the pain could become so debilitating that it would interrupt their functioning. As Polly described it:

You do not know when it [pain] can catch you. I feel the pain and how it moves around my head. Starts from the back. You do not know if you fall in a minute. And if you may be gone. (167:1)

Polly continued to experience severe pain. It was still unpredictable and unrollable several months after her fall:

I had terrible headaches. I had awful attacks. One minute I was fine. The next minute I feared. That it will ache. And it really ached. It was so terrible. (...) You are afraid. You are afraid you will die. You will die. It is good because one has to die at some point. But you have this awareness. You feel... This is something... That you may be gone in a minute. (1198:2)

Polly was unable to predict when her pain might occur, or how long it would last. Pain usually resolves within three to six months post-injury among mild traumatic brain injury patients (Irvine & Clark, 2017). However, Polly was still disturbed by pain at the follow-up. She continued to perceive her pain as debilitating and unpredictable. This is particularly alarming since it has been previously documented that chronic pain among head trauma patients related to psychiatric disorders, including PTSD, in the first year postinjury (Stojanovic et al., 2016).

Some individuals were able to determine when their pain might be likely to occur. They adjusted their lives according to their pain. Their days were shaped by a pre-set routine and by the level of pain expected. Participants who knew when their pain was most likely to occur, decided to avoid the activities or minimise the impact of the activity on their pain. Betty was very aware of what might cause her pain and she planned her actions accordingly:

I am really struggling with getting cleaned up. I used to bathe every day. Now I am afraid. I never liked to shower. I never used it. Now I do not have a choice. The worst thing is when I have to take a shower but I am in pain. I am saying. If I want to wash my hair it hurts. And then again. The water feels so heavy on my back. I do not like it. (178:1)

This extract illustrates the delicate balance between everyday tasks and fluctuating levels of pain. Betty's ability to control her routine to some extent is contrasted with the debilitating nature of the pain, which makes the routine challenging to maintain. While pain levels on a particular day with



particular activities could be managed to some degree, for some people their pain was constant and determined their daily routine. For Felicia, the pain not only stopped her from doing enjoyable activities, but it prevented her from undertaking many activities of daily living. Felicia described her daily routine in terms of “survival”:

Since I returned home, I have been in bed. I only get up in the evening. I wrap myself with a blanket and sit. At 10 p.m. I take my medicines and go back to bed. (...) In the morning I am noxious (...). I take a pain killer in the morning. Then I have a cup of coffee and a piece of cake. I survive until dinner. (169:1)

This short description is indicative of the changes in Felicia’s relationship with her body since hospital discharge. Felicia was more active before falling. After the fall, her pain was more intense which affected her daily routine that was structured around basic daily tasks. It appears that Felicia evaluated her level of pain and determined what activities she was able to carry out. Presumably her pain did not allow her to carry out meaningful and valued activities since her story lacked activities that were related to a sense of self and identity such as housework or gardening.

#### 6.2.3.1.4. **Trauma**

The theme relates to psychological consequences of falling, including trauma responses and fear of falls. Falls can bring not only physical changes but also psychological changes. The theme expresses the experiences of post-fall psychological distress. Although all participants experienced falls, not all of them developed FoF after falling. As Michael stated:

One has to be confident. Walk with confidence. (...) I do not fear. There is no need to fear. One has to be brave in life. (454:1)

Michael contrasted negative fear with positive bravery. It appears that expression of fear was not acceptable for Michael. It is consistent with the traditional view on genders according to which the masculine role involves bravery when faced with anxiety-provoking situations (Bem, 1981). Greif et al. (1981) demonstrated that males are encouraged to focus on problem-solving and gaining control over their emotions, rather than on the experience of the emotion itself.

Other participants recognised that they needed to be cautious after falling. They did not want to limit their activities but they expressed their concerns over falling in certain context. As Carrie stated:

I am cautious. For instance in a forest. It is dangerous over there if you are not cautious. Grass. Rocks. Slippery. I could fall there too. (...) My doctor told me to be cautious. I am not reckless because I cannot let myself be reckless. (715:2)

Falls are uncontrollable events and older adults were aware of the nature of falls, as any other accidents that can happen in life. They believed that falls might not be preventable and attributed them to fate. As Carrie stated:

One would have to stay at home and do nothing to avoid falling! And one can even fall at home. (...) If something is meant to happen, it will happen. You can be at home and trip over an uneven rug. (741:2)

This short description is indicative of the awareness of the unpredictability of falls and the fact that no amount of cautiousness is enough to prevent someone from falling. It reflects a delicate balance between what can be done to decrease the risk and the uncontrollability of falls. It suggests that seniors should not blame themselves for falling since nobody is able to completely control their fall risk.

For several participants living with FoF was related to limiting specific activities outside the home. For instance, Betty discontinued cycling. However, she enjoyed cycling on her stationary bike. As she stated:

I will not even sit on a bike! No way! I will not. I will not even come close to it. I am afraid. I can fall. (1442:2)

I have a stationary bike at home. Sometimes I do it every day. But I get pain from time to time. (1798:2)

It appears that Betty was reluctant to cycle outside only. Presumably, she was afraid of falling outside since she did not feel safe there. She had her fall outside and received no help. Furthermore, she cycled back home to get help from her husband. Presumably, she associated her fall with cycling back home and she consequently was reluctant to cycle outside. Participants who managed to get up without assistance or received help with getting up, also expressed their worries about the prolonged time of recumbency on the floor. As Polly narrated:

I was lucky I was able to get up twice. I could have broken a leg or something. Then I would have to wait for someone to pick me up. What if it was night? What are the chances anyone would see me? What if I do not have a mobile phone with me? I could freeze myself to death on that pavement! (1633:2)

The fear of being unable to get up or receive help in a reasonable time is common among older adults and it was also found in a study by Mahler & Sarvimäki (2012). Tinetti, Liu, & Claus (1993) reported that one in two older adults were unable to get up independently after falling. Furthermore, lying on the floor for a long time can result in injuries (Fleming & Brayne, 2008). The prolonged time of recumbency on the floor can cause dehydration, pressure sores and hypothermia (Kenny et al., 2013). Thus, it is a predictor of further sequelae such limited recovery, compromised mobility, dependence or even disability.

Male participants revealed their concerns over falling and being perceived as being under the influence of alcohol, and consequently not receiving help. As Henry described it:

I am afraid that I can lose my balance when I am outside. I have seen how helpful people can be [Sigh]. My neighbour had an endoprosthesis. He did not see a rod and he tripped. He is a big man. He could not get up. People were passing by. They saw the guy. He was dressed smart. He did not look like some drunkard. There was his crutch next to him. An obvious scene! I could not help him because of my own prosthesis. Some young girl helped him. He was so thankful. He had tears in his eyes. (1477:2)

Henry was aware of potential consequences of falling outside and he worried that he might not receive help since others could view him as under the influence of alcohol. Alcohol is still considered a major problem among Poles. Around 7% of the population drinks nearly 50% of all consumed alcohol in Poland (Abramowicz et al., 2018). There is a certain stereotype of an alcoholic person that Poles hold. A person addicted to alcohol is viewed as someone uneducated and unemployed, who does not conform to social norms and drinks heavily in public places, unlike other “good” citizens (Abramowicz et al., 2018). This view is rooted in the narrative of the soviet government, which was aimed at marginalising the problem of alcoholism among Poles (Abramowicz et al., 2018). As a consequence of stereotyping people who are addicted to alcohol, older males in the present study did not want to be associated with the stereotype and negatively viewed as alcoholics by other “good” citizens in times of need. They worried about not receiving help since they could be perceived as individuals who fell as a result of being intoxicated, thus “bad” citizens who do not deserve to be helped.

Several older adults experienced debilitating FoF which precluded them from undertraining some activities. The activities were commonly associated with slippery floors, which were often attributed as reasons for falling. Polly’s fear prevented her from walking:

I was traumatised. I am still traumatised. When I see something slippery I cannot walk. At All! My legs do not move. It does not matter what shoes I wear. Fear. (1545:2)

Henry was an amputee but he walked with confidence. He acquired FoF after falling:

I have been traumatised by it [fall]. When it was icy I did not go out. I was afraid I would lose my balance. That I would not be able to get up. (...) I was more confident before falling. It was easier to walk. It [fear] echoes in my head. Now I fear of falling. (1592:2)

Betty expressed excessive FoF which caused her physical pain:

I was in town and it was slippery. And I was afraid I would fall because it was slippery (...) I walked few steps and I felt... Pain... Holding up... aches. Because of this fear... And this here [showing her neck] aches (...) I have no pain when I walk at home. (1713:2)

Betty recovered physically but her fear remained. Her fall-related self-efficacy increased, yet it did not affect her fear. She was unable to understand what had happened and why fear was so influential in her life. For Betty fear was not an illness. That is, it did not have a cause, a predictable course or treatment that could “cure” her, which was frustrating for Betty. As she stated:

My walking is more confident this year. I can see the difference. Last year I had to use a [Nordic] stick to support myself. And now I do not. More confident... Fear stayed. The doctor said this [fear] is here. But this... I cannot see it [fear] as... This is not an illness! (2531:2)

Betty and Polly reported having nightmares about falling. Their dreams woke them up and caused distress. Polly had nightmares for several months after falling. As she stated:

I was afraid to go to sleep. I was falling. I was hitting the ground with my body. I was waking up terrified. It is not like having normal sleep. You are not fully rested. All these nightmares. (656:1)

Betty had nightmares during her hospital stay:

I had nightmares every night. I struggled with falling asleep. But when I finally managed to sleep I had all these nightmares. Luckily the bed had rails. They kept me from falling. I was waking up and actually falling. (415:1)

Nightmares following trauma exposure are common. Nightmares are a form of reexperiencing which are characterised as having remarkably vivid sensory and emotional components (Pigeon & Carr, 2016). About half of PTSD patients report nightmares which exactly replicate traumatic events (Wittmann et al., 2007). Awakenings are often accompanied by an intense and prolonged sensation of fear and anxiety which causes delayed return to sleep (El-Solh, 2018). Post-trauma sleep difficulties increase the risk for PTSD (Bryant et al., 2010). Approximately half of PTSD patients suffer from recurrent reexperiencing nightmares (Gehrman et al., 2015). Nightmares are associated with significant distress due to their recurrent nature (Lavie, 2001), and are a threat to psychological wellbeing (Germain, 2013). Furthermore, recurrent occurrence of nightmares is indicative of severity of PTSD symptomology (Wittmann et al., 2007).

Betty was easily startled. As she described it:

I do not know what is happening to me. These nerves... Like... I was playing a computer. I heard some noise and I jumped. I felt terrified. Like the worst thing just happened. (1501:2).

Betty continued to function in a “red alert” status of readiness, behaviourally primed for another stressful event. She tended to interpret ambiguous stimuli, which were totally unrelated to her fall, as threatening. Betty’s body was in a state of preparedness and when she thought she was in danger,

her body instantly reacted to it. Her reaction to the noise relates to the PTSD hyperarousal criterion of exaggerated startle response, which is considered the purest example of a psychobiologically conditioned response (Wilson & Keane, 2004). The startle response is an instinctive reaction to unexpected stimuli, such as loud noises (Wilson & Keane, 2004). It is considered a core symptom of PTSD (Miller et al., 2009). Shalev et al. (2000) assessed startle responses to loud tones among trauma survivors. It was found that individuals with PTSD symptoms showed an increase in startle response, while people without PTSD showed a decrease in startle response over the 4-month period. It suggests that the severity of the symptom increases over time which is what Betty complained about. She stated that her startle responses had increased over time to the point she was much disturbed with it and sought professional help.

However, not all participants who reported debilitating FoF, developed it as a consequence of falling. Jade developed excessive FoF prior to her own fall. One year before Jade's fall, she witnessed someone's fall which triggered her FoF. This challenges the traditional assumption that having a fall and FoF are always related. Jade, even though she had not had a fall, developed excessive and debilitating FoF which limited her activities. However, one does not have to experience a traumatic event to develop PTSD. Since the third revision of the DSM, the definition of traumatic events explicitly includes not only events that are personally experienced but also events that are witnessed (APA, 1987).

Jade described the moment that triggered her FoF development:

My neighbour from the other building. Very kind. "Jesus! What have you done?". She said she walked here. And there was a car. And the curbs are so high there. "I wanted to move back but the men just drove by". They stopped. And on the bench. I moved back. I tripped. And she broke her leg. (201:1)

Jade narrated the story as she was living it, not her neighbour. She said: "I tripped". It may relate to Jade's empathy. Empathy may be the reason why some people develop trauma responses to events that are experienced by others. While empathy is usually described in terms of positive consequences, it may also confer risk for personal distress, depression or anxiety when witnessing the suffering of other people (Tone & Tully, 2014). In fact, Jade talked about her FoF in places that resembled the place where she had witnessed the fall:

I was panicking! I was so afraid of falling! (...) I was obsessed. I was so scared. When I went to the town, I took my husband with me and he had to hold me. (...) I was walking slowly, small steps. I looked for a rail. Whether the path was sanded. I was very careful. I did not want to hurt myself. When I pass by the curbs. Or something. But it is the same. (148:1)

Witnessing trauma can lead to memorisation of the associated cues and context (Chen et al., 2009; Jeon et al., 2010). Her FoF was contextual and remained until Jade experienced her own fall. After Jade had a fall, her FoF decreased:

I do not have that fear. That I can fall. I was so afraid before. Of the curbs. I do not have the fear that if I stand I will fall. It was way worse before. I always thought that it would hurt. And now I can tell it hurts [laugh] (258:1)

It appears that Jade was much more afraid of falling and the unknown consequences that falls might be related to before her fall. Potentially, Jade experienced some relief after falling, since she faced the problem which had triggered much anxiety in the past. Thus, her FoF and anxiety over falling decreased considerably, since she was no longer unaware of the fall-related difficulties and she knew she was able to manage the situation.

### **6.2.3.2. Escaping the cage**

The theme “Escaping the cage” relates to the process of physical and psychological recovery from fall-related injuries. It includes strategies applied in order to cope with the recovery. Most participants of the current study joined rehabilitation programmes which was a part of their treatment strategy. They showed various approaches to their recovery which were classified according to the SOC framework (Freund & Baltes, 1999). SOC strategies applied by each participant are presented in Table 19 at the beginning of this chapter.

#### **6.2.3.2.1. Being able to act**

Falls can be viewed as a temporary interruption of older people’s lives. They relate to the sudden loss of control. After the immediate feelings of shock, immobility and dependency, older adults attempt to regain the control over their lives. This is particularly important since perceived control and self-efficacy are highly associated with wellbeing (Brandtstädter, 2009). The theme “Being able to act” relates to narratives of older people who took an active approach to their recovery. The SOC model was incorporated to the analysis of the stories to explore strategies older adults applied in order to cope with the recovery.

##### **6.2.3.2.1.1. Selection**

People engaged in selection strategies, such as selecting appropriate goals and prioritising goals, given their health-related challenges and limited resources. Several participants were hopeful set clear aims of the recovery. As Michael stated:

I want to regain maybe 90%. Maybe 99% of my functioning. If I walk... I will walk. (...) I want to be able to work again. I like being active. Physical activity. (200:1)

This example is indicative of older adults being aware that they may not regain their pre-fall functioning. However, for Michael, it was important to be physically active. Michael found coping with initial difficulties and hoping for good outcomes crucial for his recovery. He also highlighted the importance of choosing recovery goals and overcoming obstacles in order to be successful. Michael described how to overcome the initial drop in mood:

You have to be hopeful. You have to make the effort too. You have to try hard. (...) You have to have a goal and make everything to achieve it. There are many challenges in life but you have to find your way. Your faith makes it all better. I am aware my functioning may decrease by 2 or 3%. But it is not important. One has to function and work for their family. To have a better life. (254:1)

Michael reported that one of his goals was to continue to be useful to others. Indeed, helping others promotes self-esteem and self-identity. It is in line with Rozario et al. (2011) who found that remaining useful was an important goal for a number of older adults with chronic health conditions. Furthermore, Michael identified several personality characteristics as helpful to manage the initial drop in functioning and mood. They included confidence in own strengths, commitment and hopefulness. These remarkably correspond to the concept of elective selection (Freund & Baltes, 1999).

Older adults tended to engage in relatively high amounts of elective selection as their recovery progressed. It included undertaking new, physically demanding activities. Betty selected a new goal of joining dancing classes after her rehabilitation programme had ended. She wanted to continue to be physically active:

Dancing is the best exercise. You move your all body. And you enjoy it. You do not feel you actually exercise. I was afraid at first. Just not to fall. If I fall, maybe there would be nothing to pick up anymore. (2877:2)

Selection also relates to organising selected goals into a hierarchy, which is what Jade did. Jade prioritised her goals. The main goal was to become mobile again. She wanted to be able to do gardening, and ultimately, she wanted to be able to cycle again. Cycling was an important activity for her, since she did not know how to drive a car and it enabled her to travel around the town so she could easily see her relatives and friends. After Jade was diagnosed with an eye problem, she adjusted her goal hierarchy according to her vision impairment. That is, instead of cycling, she decided to take long walks with her husband, which she also found enjoyable:

I was hoping I would be able to cycle again. The leg healed eventually. I have no pain now. [Pause] I still want to go out. So I go out with my husband. We walk for hours. This way he is active too. (1987:2)

Adjusting goals due to decreasing resources is related to loss-based selection (Freund & Baltes, 1999). The strategy was applied by participants in order to continue engaging in cherished activities but in less resource intensive forms. Changing from previously selected goals can be a challenging process, and disengaging without regret or anger from unachieved goals is an important adaptive strength (Brandtstädter, 2009). Jade used selection to affirm her autonomy in deciding not to continue cycling. She framed her loss by thinking that she was not forced into giving up the activity, but she was able to exercise her choice and believed she helped her husband stay active.

Other respondents needed to change their goals since they faced severe complications during their recovery. Some older adults were rather impatient and wanted to achieve their aims quickly, which resulted in complications and ultimately hindered their recovery. Wayne found hard to accept his temporal difficulties. He wanted to be mobile again. He rushed his recovery which caused him a severe infection:

I wanted to stand up on my own two feet again. And I pushed it. I tried to do it too soon. I stood on my foot. It moved some of the screws. And I got an infection. We had to rush to orthopaedic emergency. It was Sunday night and we did not know... Is it open? I was in so much pain. I wanted it to end. [Pause] After that incident I gave up. What will be will be. (230:1)

Wayne was very anxious about his business and financial situation. He rushed his recovery hoping for a good outcome. It resulted in further struggles which ultimately prolonged his recovery. It was an experience which changed Wayne's attitude towards his recovery. He decided to conform to doctors' recommendation and the recovery goals selected by them, even though it was related to a long-lasting and slow process that he had been anxious about. Wayne was worried his actions could lead to further delays. His infection, which can be considered a loss, since he acquired more pain and it hindered his recovery, called for a concentration of the limited resources into areas of behaviour of great importance. It corresponds to loss-based selection (Freund & Baltes, 1999). He re-evaluated his goals as a reaction to his infection. Wayne no longer prioritised returning to his business, but now focused solely on his recovery. He devoted all his resources, such as time, finances and social support for his recovery.

#### 6.2.3.2.1.2. **Optimisation**

Once individuals select a goal, or a hierarchy of goals, they must next follow through with actually achieving the goals. In the terminology of the SOC model, optimisation relates to actions that move an individual closer to attaining selected goals. Optimisation is linked to the ability of the individual to modify the environment to create more favourable or desired outcomes for the self (Coleman & O'Hanlon, 2017). In reporting the use of optimisation, older adults often talked about enhancing their physical health and physical abilities.



The most commonly applied strategy was taking part in rehabilitation programmes which was a part of their planned treatment. Carrie's motivation to take part in the programme was to prevent long-lasting pain and promote her functioning:

I survived it. A man is strong. Can survive everything. (...) There were ladies who complained that they were in pain. But one has to exercise! And I told them: "Of course it hurts but you have to exercise. If you don't exercise, then it will stay this way and it will hurt more". (1187:2)

At the beginning of the rehabilitation Carrie experienced much pain. She received help from her physiotherapist who was able to address her fear of injuring herself again. Thus, she was aware of the consequences of post-fall inactivity and she wanted to prevent her health and functioning decline. This is in line with previous studies which reported a common theme of "use it or lose it" among older adults who despite difficulties continued to exercise (Hardy & Grogan, 2009; Rozario et al., 2011). Furthermore, for Carrie social support was crucial and she attempted to motivate and educate others who were in a similar situation but did not want to engage in the rehabilitation. It appears that she wanted to be a "successful other" to patients who struggled with their recovery.

Jade, in order to improve her physical functioning, decided to keep a diet to lose some weight. She believed that it would benefit her leg which was fractured. She stated:

I have never been skinny. It is in my DNA. [Laugh] I have tried to lose the weight so many times. But I have always managed to put on weight again. I have decided to see a dietician. I see her twice a month. I have already managed to lose some weight. It is easier for the legs to carry less weight. [392:1]

Betty often sought information from formal sources such as doctors but she also asked her family or friends, or used the internet.

So I got myself an infrared mat. For my back. I asked my orthopaedist if it was good. He says: "I do not know". A young doctor and he does not know! I asked another doctor. He says: "It is not good because it makes the calcium evaporate from the bones". I had never heard anything like that. I looked up the internet. It said it is good for the joints. I still use it once a day. It is so pleasant. It makes my back so relaxed. I will ask my physiotherapist. He should know. He studied these things. (220:1)

Betty, who experienced excessive FoF and anxiety which affected her functioning, decided to seek professional help, which is also a form of optimisation (Coleman & O'Hanlon, 2017).

I saw a doctor. The first time after the accident [fall]. Anxiety disorder. Without depression. Just anxiety. Then [follow-up appointment] she says: "It is worse than before". I seemingly do not feel it. But I constantly think about it. When I bend. When I walk. It is with me constantly. (3255:2)

Optimisation also relates to asking for help from relatives (Coleman & O’Hanlon, 2017). Bert asked his brother-in-law for help with walking and exercises since he had some experience and knowledge on the recovery process:

My wife is a tiny woman. I did not want to make her tired. He [brother-in-law] is a strong man. He broke his leg before so he knew what was going on. He knew the pain. He helped me with walking and exercises. (1099:2)

Betty believed that support provided by relatives and friends was crucial. Betty, in order to increase her physical activity, performed Nordic walking with her friend, who also struggled with osteoporosis. She felt understood and motivated, since they both experienced the same health problem. They could share their experiences and exchange the knowledge on the issue. As Betty described it:

People in situations like that need support. A man becomes stronger. Has to talk a lot. Laugh a lot. One is not able to do much without others. (2739:2)

Blackburn & Owens (2015) found that social support helped traumatised individuals to orient their life towards the future and promoted healing. Betty had many friends who shared the same hobbies, such as Nordic walking. It has been found that having friends with similar interests relate to trauma recovery (Blackburn & Owens, 2015). These friends provided practical support, spent time with her and encouraged her when she encountered obstacles.

#### 6.2.3.2.1.3. **Compensation**

When capacities are reduced or lost, the principle of compensation is used and it relates to the use of alternate means to reach selected goals or to maintain functioning (Coleman & O’Hanlon, 2017). The strategy involves the recognition of constraints or challenges and the need for individuals to respond to the challenges (Coleman & O’Hanlon, 2017). A compensatory mechanism frequently applied by the study participants was using crutches and canes which are the most common forms of assistive equipment used to aid in locomotion (Richards et al., 2006). Crutches allowed participants to become newly abled and perform basic activities such as self-care or going to hospital for follow-up appointments. Older adults in the present study showed various attitudes towards crutches. Crutches might be a sensitive subject to older adults since assistive devices clearly identify device users as subjects for the social evaluations that are applied to disability (Brooks, 1991). Thus, user acceptance varies from strong positive evaluations (Caudrey & Seeger, 1983), to rejection (Capozzi, 1983).

Bert had a rather positive outlook on his crutches:

Oh this is my friend! [Laugh] I would not be able to do anything without it! It helps me move around the house when my wife is at work. It gives me the feelings that I am not so disabled after all. (335:1)

Bert expected to use his crutches for several weeks only. They enabled him to perform various activities until the end of his physical recovery. This is in line with Allen et al. (2001) who found that the use of crutches decreased the amount of personal assistance required by carers. For Stephanie using crutches was not a temporary situation:

I have fallen even today. Yes. When I go somewhere... I need my crutch. I am not able to leave my home without it. Once I was cooking carrots. I turned my head and fell. I woke up and the kitchen was full of smoke. (107:1)

Stephanie relied on her crutch which she treated as a form of fall prevention. Chen et al. (2000) found that older adults who viewed their assistive devices as helpful, perceived them as a source of security. Crutches may be perceived as devices which are extension of the body and easily accepted (Antler et al., 1969). Other participants were reluctant to use crutches and attempted to walk independently. Jade stopped using both crutches two weeks after her surgery, which was against the medical guidance she had received:

The doctor told me to use both crutches for at least three weeks. I would not say I am in pain. But when I go out I use just one now. I do not use them at home. When we went to the cemetery I just took one. Just to support myself. But I did not really need it. (190:1)

In the follow-up interview Jade admitted that she should have conformed to the medical guidance:

I pushed it. I should not have done it. But you know. I felt good. It did not ache. But it started to ache later. I used the crutches for another two months. Because it ached. I worried I could have damaged my bones. But it is a miracle it ended up like that. (2980:2)

Jade did not consider crutches as necessary and helpful, which is in line with Mann (1993), who found that crutches users were highly dissatisfied with their devices. While assistive devices can help older adults maintain their sense of independence and autonomy (Hammel, 2000), Jade did not find crutches relevant to her condition, since she was able to walk independently two weeks after her surgery. It has been previously reported that individuals who were not followed-up on the effectiveness of devices as their condition changed, were least satisfied with the device (Mann et al., 1996). Jade appeared to have a desire to remain as autonomous as possible, and presumably she perceived crutches as a threat to her independence. Older adults after surgeries tend to strive for independence (Carpentieri et al., 2017). Compensatory strategies decreased wellbeing of seniors due

to diminished autonomy and maintenance of autonomy was an important goal for older adults (Carpentieri et al., 2017).

Betty's financial situation allowed her to purchase a wide range of equipment in order to cope with her recovery. She used a substitute to perform the activity which she enjoyed. That is, she felt unable to cycle outside, so she purchased a stationary bike. She was able to continue her desired activity, albeit in reduced form. She valued it since it kept her joints in a good condition. Betty planned her travels according to her pain expectations:

Getting into a car is problematic for me. My daughter's car is bigger. It is easier for me to go inside. But my car is smaller. I bend once, twice, I am already in pain. I get out. I am in more pain. I am inside. It hurts. I take a pillow. It is better but not for long. If I have to go somewhere further I do not drive. I ask my daughter for help. (1290:2)

Compensation reflects the recognition of constraints and challenges in the environment (Coleman & O'Hanlon, 2017). Betty responded to such challenges by carefully planning her actions, which included asking for help from her family. Compensation relates to taking counter-steps so that any potential impairment is lessened (Coleman & O'Hanlon, 2017).

#### 6.2.3.2.2. **Being unable to act – death as a positive resolution**

For some participants there was a sense of no return to the lives they had lived. They felt unable to act and make a change in their lives. They appeared too anxious to think about their future. Anna did not look forward and avoided talking about her future. Her narrative flow was broken since she talked about her past and present, but not her future. Her future became uncertain, as she stated:

I cannot have any plans for the future until I am recovered (...) It is hard for me to say anything. I am not thinking about my future. (397:1)

Anna had a heart surgery and was in a pharmacological coma for three months. She then returned home and re-organised her life according to her new condition. Having made all the changes and adjustments, she hoped for carrying on her life she had lived, so the things could have gone back to normal, but that was disrupted by her fall. This second major disruption in her late life precluded her from returning to her familiar world. Anna was a hip fracture patient and concerns over unpredictable future are not uncommon among such patients. Gesar et al. (2017) found that hip fracture patients doubted their recovery and whether they would be able to continue their lives they had lived before the injury, since they were aware that the time at home could be different from before.

Betty's perception on life was heavily affected by her fall. The life she used to live had come to an end and she felt that her life would only be declining. Betty had a negative outlook on ageing. For

her ageing was “vegetation”, where one is no longer able to make any choices and is condemned to live an unfruitful life leading to the inevitable end. As Betty stated:

Old age is vegetation. We live because we have to live. Now when I am old I say: “Why do I need this or that? [Pause] grandma does not need a thing”.  
(2478:2)

Betty appeared to be “arriving at feeling old” (Minichiello et al., 2000). This transition can be difficult as the stereotypical “old” person is often associated with poor health, frailty and ultimately death (Minichiello et al., 2000). The fact that Betty’s description of old age was negative, suggests that transitioning through the ageing is an unsettling process (Minichiello et al., 2000). The ageing process was presumably challenging for her, since she had been forced to retire early and it was something she was not prepared for. Potentially, her fall started another life changing process leading to frailty and incompetency.

The alternative of uncertain future was the future with disability. Several respondents expressed fear of becoming an invalid or burden to others. Although receiving temporary care after falling was rather easily accepted by the study participants, the idea of requiring long term care caused them much distress. They were truly worried that they would be unable to care for themselves and would have to rely on others. They feared they might injure or re-injure a part of their body or they might have new health problems diagnosed. They did not want to be a burden to others. Polly was afraid of becoming disabled and requiring help with personal and intimate care. Polly believed that death was better than disability:

Think about... At this age? I only fear... Fear... Disability. I fear that someone will have to take care of me. You know... To change my diapers. This is what I fear the most. You know... There are many illnesses... So some say: “He [Polly’s husband] died too early” but he did not need anyone. He did others a favour! (268:1)

According to Polly, ageing without disability is a “favour” to others, and being disabled is a burden to others. Mahler & Sarvimäki (2012) found that fear of having another fall was related to worries that older adults would be unable to take care for themselves and would have to rely on others. Fear of being a burden to others after a fall was also reported by Kong et al. et al. (2002). The authors attributed their finding to cultural and social factors (Kong et al., 2002). That is, Chinese are socialised to concentrate on the consequences of interpersonal relationships and social obligations rather than on personal feelings. An older person faces financial struggles which can create a sense of a burden to families. Furthermore, most families do not receive any support from the state (Sowada et al., 2019). Older adults in this study were aware of the cost of their injuries and some struggled with the financial cost of it. As Michael described it:

The medicines are so expensive. The swelling medications is PLN 10 for six tablets. It is PLN 240 per month. It is very expensive comparing to the beggarly pension of mine. PLN 1500. But now I cannot do anything about it. (55:1)

Several older adults appeared to have a greater appreciation for mortality, having presumably spent longer time considering their health and ill-health throughout their lives. Stephanie was very ill during the war and after her first pregnancy. She also struggled with her frequent falling. Furthermore, Stephanie was afraid of becoming disabled since she witnessed her sister's disability. Stephanie wanted to remain independent until her last days. She was even prepared to die any time in order to avoid disability:

I wish I could die today. That... That would make me so happy. That I would not need help. I am afraid I would end up like my sister. She fell. She broke her leg (...) Now two people need to take care of her. (1601:2)

Stephanie's comment demonstrates a complete acceptance of her mortality. It is in line with Heikkinen (2004) who found that older adults felt they had lived their lives and were content to accept the next stage. For Felicia, her fall triggered her to think about her mortality. It was not until Felicia had returned home that she recognised that her life was never going to return to the one she had lived prior to her fall. Her husband specifically nominated that point in time as being the moment of Felicia's change, and this is when her inactivity started. He often attempted to encourage her to perform certain activities and tried to make it easier for her to do them, which related to compensatory strategies (Freund, 2008). However, Felicia was rather reluctant and only occasionally agreed to do something. As Felicia stated:

I cannot walk. My husband wants to drive me. He says: "Come, let's go". I say: "Let's see my grandparents grave". He took a stool for me. And I sat there. By the grave. Then I went to my parents' grave. And this is how one lives day by day. (602:1)

In Felicia's story, this was her last attempt to undertake any activity aside from her daily routine. She decided to stay indoors and limit her activities to the minimum. Felicia's health situation and pain appeared to be beyond her control, to the point she considered her death as a positive resolution, since she was unable to move forward with her life. She was afraid of having more health problems diagnosed which would cause her even greater pain and struggles:

To tell the truth I am waiting for my death. I do not care about anything anymore. (...) This life is indifferent to me now. I am not thinking about next summer. (...) I am not afraid of dying. (...) I do not want them to find me a new disease. I only do not want to suffer. (148:1)

Felicia appeared to be already in the process of finishing up some things before her death:

They [family] can do whatever they want but they should let my husband live here. I do not care about my life anymore. I have lived my life. I have many grandchildren. I met them all. (...) I have made my last instalment payment for the TV. I have two more for the hoover. But it will be paid. (551:1)

Felicia's comment relates to her responsibility as a wife despite her advanced age and frailty. Her role is one that many older women continue to play throughout their lives. In a sense, Felicia was entering into the "dying role" (Emanuel et al., 2007). The term refers to an active acknowledgment of entering the last stage of the lifecycle. Part of this role involves the desire to address the practicalities of dying. Felicia wanted to ensure that her husband would be safe and she also spoke of paying her bills so her loved ones would not have to worry about it.

Betty, whose mobility was much compromised after falling, treated disability in terms of punishment. At the same time, she valued a sudden death without suffering. Suffering means the disruption of normal functioning of life. For Betty it meant being sick and immobile, which is what she experienced for several weeks after her fall. Betty treated a sudden death as it was a reward and she wondered whether suffering might be punishment for wrongdoing:

Some people are lucky to die suddenly. Without pain. Without suffering in bed. Sick. I do not know whether someone can earn a sudden death. Without suffering. Without pain. And the one who was bad in life should suffer? I cannot imagine it. How it all works. (170:1)

Betty wondered whether good things happen to good people and bad things happen to bad people, which is a common belief among traumatised individuals (Schnyder & Cloitre, 2015). In that view, the world is a fair and just place. The assumption relates to one's desire to find an orderly, cause-effect association between an individual's behaviour and the consequences of that behaviour (Resick et al., 2017). Traumatized individuals assume that they did something bad that may have led to the event or that the event is punishment for something they may have done in the past. Betty, who had firm Christian beliefs, was more vulnerable to PTSD, according to emotional processing theory (Foa & Rothbaum, 1998). She had a clear concept of safety which was violated by her fall and further by her friend's death. Consequently, it reinforced Betty's feelings of pervasive threat and incompetence, which are characteristic of chronic PTSD (Edna B Foa & Rothbaum, 1998).

### **6.3. Discussion**

The aim of this qualitative research was to gain an understanding of how older adults experience their falls and fall-related recovery. From the thematic analysis, four manifest themes were constructed. The major theme related to the past lives of participants involves potentially traumatic experiences, such as war experiences, health issues, or a loss of a loved one. The second timeframe corresponds to the occurrence of falls and hospitalisation. The theme “Fall from the normality” refers to the occurrence of falling and negative sensations related to it. Older adults with fall-related injuries enter the world of health professionals, medical procedures and hospital environment. The final timeframe relates to participants’ lives since falling. It includes two themes – “Being able to act” and “Being unable to act”. The first theme emerged from narratives about active approaches to the recovery. It includes strategies older adults applied in order to cope with their fall-related injuries. The SOC model (Baltes & Baltes, 1990) was applied to the analysis of the recovery stories. The second theme emerged from narratives about passive approaches to the recovery. The stories were narrated by older adults that felt no longer able to return to the lives they once had lived.

#### **6.3.1. Why are falls traumatic?**

For some participants falling was not a significant event in their lives. It was regarded as another accident that occurred in life, which was not associated with ageing. Older people in Poland are often unaware of the problem of falling (Kamińska et al., 2017; Kłak et al., 2017). This is in sharp contrast to the assumption that falls are a threat to an older person’s identity (Ballinger & Payne, 2000; Yardley et al., 2006). Older adults often tend to distance themselves from the stereotype of someone who falls, since falls are usually encountered by older and frailer individuals (Yardley et al., 2006). It seems particularly relevant to people who have experienced only one fall. Friedman et al. (2002) found that such fallers tend to attribute their falls to unexpected environmental challenge. Yardley et al. (2006) reported that older adults who were at risk of falling, did not want to be identified as “fallers” in order to protect their identity. In fact, older adults may not consider the event as a fall, even when they have fallen (Dollard et al., 2012). Admitting that a fall has occurred in one’s life brings significant implications, such as legitimising the fall and therefore admitting that one is now recognised as a faller (Kelly & Field, 1996). This self-defensive behaviour may be understood in terms of one’s resistance to be defined as old and therefore avoid negative stereotypes of ageing (Ballinger & Payne, 2000). However, older adults in the present study did not hold such assumptions and stereotypes. They believed falls could happen to anyone, regardless their age and none of them attributed falling to ageing. This kind of paradox and a lack of awareness of the problem of falls among older adults, protects fallers from such stereotypes. As a result, they did not perceive falls as a threat to their identity. Most of the respondents did not talk about shame or



embarrassment related to rehabilitation sessions attendance or receiving help from their relatives. Thus, although the lack of awareness of falls among older adults is problematic in terms of e.g. falls prevention, it can actually be protective of their identity.

#### **6.3.1.1. Previous adverse life events**

The Life Thread Model (Ellis-Hill et al., 2008) assumes that the life thread provides continuity and a holistic self-concept. One's psychological health is promoted through an integrated personal identity that anchors one across varying circumstances throughout the lifespan (Ellis-Hill et al., 2008). This process provides a basis for assurance about the future (Ellis-Hill et al., 2008). Because the narrative consists of both memories and plans, one's sense of stability and consistency can be disrupted by injury or disability (Ellis-Hill et al., 2008). However, the problem arises when individuals encountered various negative events in the past, which affected their life threads prior to their falls. Indeed, continuous or repeated exposure to adversities can result in cumulative negative effects on people (McEwen, 2005). Thus, it is important to highlight here that who does or does not respond to injurious falls with PTSD symptoms is not a random phenomenon.

Adversity, stress exposure, and trauma can have long-lasting negative effects on wellbeing and psychological health (McGee et al., 2018). Peritraumatic emotions, support and life threat have been found to be the strongest predictors of PTSD (Ozer et al., 2008). In particular, early-life stressors have been found to have particularly severe consequences on health-related problems and mental health disorders (Krammer et al., 2016). Several participants described the apparent hardships they had experienced, such as living through the WWII, recessions, health issues and the death of their loved ones. Their lives were characterised by resilience in the face of hardship of growing up in wartime and post-war time in the Nazi and Stalinist era, yet, presumably, some of their life threads might have been permanently damaged at that time, which affected their approach to their recent falls. For several participants, falls happened at a time when they were touched by the nearness of death. Thus, their life threads were damaged before falling and perhaps still disconnected due to the short time interval between the events. Gandubert et al. (2016) reported that peritraumatic stress is an important predictor of PTSD. For instance, Anna had a serious heart surgery several months prior to her fall, and Polly lost her husband a year before falling. The events brought imbalance into their lives, which might not have been restored before falling. Such occurrences might have potentially affected older adults' outlook on their falls. Fall-related decline and a loss of independence, even temporary, can cause anxiety in older adults as they contemplate their future (Quine & Morrell, 2007). Their future would relate to a continuation of lives that had been shaped by their past and life's circumstances, including hardships related to health, pain or financial difficulties. They

expressed their desire to die peacefully, giving an impression as they did not want to live through another hardship.

#### **6.3.1.2. Medical care**

All participant experienced falls which required medical attention. They entered hospital environment which can be a distressful event (Xyrichis et al., 2018). Most participants encountered at least some issues with their hospital admissions and hospital stay. Although some of them were satisfied with the medical care received, the majority of older adults talked about their disappointments related to health professionals and hospital environment. Dissatisfaction with care was a common complaint among older adults. It related to a discrepancy between older adults' expectations and the practice they encountered at hospital (Lindhardt et al., 2008). Sivertsen et al. (2018) found that care was not always prioritised in everyday nursing practice. The perceived absence of care, or feelings of being mistreated, may create worries and frustrations with medical care received. It may also relate to a lack of trust in healthcare in general, which was expressed by several participants. However, trust is a value that lies within the concept of caring (Sivertsen et al., 2018), and it has been found particularly related to the quality of contact with nurses, indicating that relational and communicative aspects are related to trust (Sivertsen et al., 2018).

This study re-iterates the importance of the provision of information about patients' condition which can increase personal control at hospital. It has been previously highlighted that it is important to provide information to patients (Weiss et al., 2006), and their relatives (Macleod et al., 2005). One of the reasons why some older adults felt poorly informed about their condition may relate to distress experienced at hospital. That is, contextual factors can influence the effectiveness of information exchange and can limit older adults' ability to process the information (Giske & Artinian, 2008). It suggests that relatives should be present when engaging in discussion around older adult's condition. This study highlights older adults' expectations of their relatives to act as their advocates at hospital. These relatives have important knowledge about their older relative and often feel responsible for the relative's wellbeing (Lindhardt et al., 2008). They also advocate for quality care aimed at increasing the older person's chances for a better recovery (Popejoy, 2011). Indeed, it has been reported that relational approaches to care led to more positive experiences during hospitalisation (Bridges et al., 2010).

#### **6.3.1.3. Loss of control**

The event of falling triggered the feelings of loss of control. Older adults suddenly found themselves on the ground, with much pain and confusion over what might have happened to them. They were forced to grasp the significance of their injury and judge whether they needed medical help. They needed to decide what to do. Some people, who fell when others were present, needed to ensure that

other people were aware of the severity of injury that the faller experienced. The study revealed that such individuals quickly received help and first aid. On the other hand, there were some individuals who struggled with convincing others that their injuries were severe. If people had fallen when they were alone, they needed to take control. Most individuals sought help from their relatives before seeking professional help. This highlights the importance of family members in older adults' lives.

In accordance with previous research, this study highlights older adults' struggles with restrictions they experience after falling. Individuals identified feelings of loss of control resulting from changes in independence and lifestyle, normality and mobility due to pain. All participants expressed that their mobility was affected by their falls. They talked about having difficulties in standing up, walking and personal care. Several participants talked about a sense of guilt or embarrassment with not being able to undertake the tasks they would normally perform. A restriction in activity often leads to feelings of frustration and a sense of loss related to being unable to do the things they could do before (Hawley, 2009; Kong et al., 2002).

All participants experienced at least some levels of social isolation. Some of them felt isolated already at hospital; for some it was the experience which began at home. Fallers often report the inability to leave home, which leads to isolation, resulting in feelings of frustration and anxiety (Roe et al., 2009). Furthermore, half of the respondents lived in rural communities and were faced with a double-burden of living alone with compromised health status and limited access to healthcare and social services (Przybyłka, 2017).

### **6.3.2. Impact of falls**

#### **6.3.2.1. Fear of falls**

The lack of knowledge of the problem of falling was related to older adults' unawareness of their fall risk. Some participants were aware that certain activities could pose a risk, while others had no awareness that an activity could cause a fall. Participants with little understanding why they fell had little appreciation of the risks associated with specific activities, and were unlikely to adjust their behaviour to prevent future falls. Participants who did not believe they were at risk of falling, rushed their recovery and undertook relatively high-risk activities, even though they knew this was something they should not be doing. It highlights the importance of an older adult's perception of their own level of risk.

Several participants talked about "carefulness". Carefulness as a protective strategy is a common theme reported in the literature (Gardiner et al., 2017). Regardless of older adults' acknowledgement of FoF, most respondents recognised the need for carefulness. Carefulness was perceived as something positive by the study participants who often contrasted it with carelessness, which they

criticised. Carelessness and hurrying manner were most commonly reported reasons for falling by older adults who often blamed themselves for not taking care when they fell and claimed to take more care in the future. On the other hand, one of the female participants mentioned that people should not blame themselves for falling since falls are accidental, uncontrollable and unpredictable, or referred to compelling external situations, as has been found in several studies where older adults gave similar explanations (Meadows et al., 2004; Roe et al., 2008; Yardley et al., 2006). That is, too much carefulness may have negative effects on older adults. Mahler & Sarvimäki (2012) reported that excessive carefulness related to the fall risk awareness and FoF, resulted in feelings of isolation.

Some older adults expressed much FoF and overestimated risks, resulting in activity limitation. Older adults who overestimate their fall risk are likely to restrict their physical activity, which potentially may increase their fall risk (Delbaere et al., 2004). Participants with this perception suffered a significant injury, such as spinal fracture or head injury. This is in line with Robson et al. (2018), who found that older adults with severe injuries expressed much FoF and adopted extreme measures to reduce their risk for future falls.

#### **6.3.2.2. Importance of pain and traumatic stress**

The study revealed that all individuals experienced great pain. However, participants experienced it differently. Pain is a multifaced and highly personal experience (Ip et al., 2009). Pain is “whatever the experiencing person says it is and exists whenever he/she says it does” (McCaffery, 1968). For individuals who perceived their falls as any other accident in life and did not anticipate falls to have long-lasting influence on their lives, their pain was manageable and expected to decrease over time. However, for some older adults their pain was unpredictable and uncontrollable, and they found it hard to manage it. It was also triggered by fear when faced with fall-related context, such as slippery floors.

Although pain and PTSD are distinct constructs that can occur independently, there is much comorbidity between them (Villano et al., 2007). There is a vast amount of research showing strong associations between PTSD and pain (Asmundson & Katz, 2009). The present study suggests that pain may be a predisposing factor for PTSD development. Several older adults experienced pre-fall pain, which was then increased by fall-related injury. Preoperative pain has been found to be positively associated with postoperative pain intensity (Caumo et al., 2002; Kalkman et al., 2003). Furthermore, Norman et al. (2008) found that pain was a risk factor for PTSD and the risk increased with pain.

For some individuals, their post-fall pain was beyond their control. Pre-existing pain, age and anxiety have been previously found to be predictive of increased postoperative pain (Ip et al., 2009).

It may potentially relate to attentional bias towards pain. Van Ryckeghem et al. (2013) proposed that individuals with chronic pain develop such bias towards pain-related information because they are constantly confronted with the presence of pain. They found that attentional bias was related to higher pain severity. The more pain they experience, the more attentional bias is established (Van Ryckeghem et al., 2013). Schoth et al. (2012) found that individuals with chronic pain showed significantly greater attentional bias towards pain-related information. For the fallers who reported pre-fall pain, either their pain resolved over time, such as Betty who experienced pain for few years post-head injury; or their pain was unresolved, such Felicia's pain which was already beyond her control prior to her fall. The latter one was more common among traumatised participants. It can be speculated that their attentional bias towards pain was already established before falling and it was enhanced by their falls.

Warren et al. (2016) found that 28% of orthopaedic patients had PTSD at six months post-discharge. Furthermore, greater pain seemed to be predictive of increased PTSD, as well as poorer physical and mental functioning (Warren et al., 2016). Archer et al. (2016) found that pain following traumatic orthopaedic injury was associated with PTSD at one year post-discharge. Ponsford et al. (2008) found that nearly 20% of orthopaedic patients showed PTSD symptoms at 1 year, and this proportion dropped to 14% at 2 years post-injury. Moreover, anxiety levels did not dissipate between 1 and 2 years among 15% of orthopaedic patients (Ponsford et al., 2008). Pain-related anxiety has been found to be one of the most disabling outcomes of chronic pain (Turk & Okifuji, 2002). Anxiety has been found to lower pain threshold (Rhudy & Meagher, 2000), and overestimate pain intensity (al Absi & Rokke, 1991). Heightened levels of pain-related anxiety contribute to activity avoidance and reduced social contact (Hadjistavropoulos et al., 2000).

Several older adults experienced physical pain when faced with the fall-related context, which precluded them from undertaking the activity. Painful flashbacks have been previously documented among traumatised individuals (Whalley et al., 2007). Flashbacks are experienced as if they were happening in the present, and they contain more sensory details than non-trauma memories (Brewin, 2014). According to Ehlers et al. (2004), when flashbacks of the traumatic experience occur, individuals lose all awareness of their present surroundings and literally appear to relive the trauma. Furthermore, an individual experiences similar physical reactions and motor responses to the ones that accompanied their original trauma event (Brewin et al., 1996). Moreover, they experience similar physical reactions and motor responses to the ones that accompanied their original trauma event (Brewin et al., 1996). Pain flashbacks relate to flashbacks which include pain experienced at the time of a trauma (Macdonald et al., 2018). They have been found to be present in 49% of traumatised individuals (Macdonald et al., 2018). Injury patients may experience trauma memory

including a sensory pain component and the memories can further evoke and maintain reexperiencing, avoidance and hyperarousal (Liedl et al., 2010). Bartoszek et al. (2017) reported that the intensity of pre-treatment pain was associated with greater reexperiencing symptoms.

When PTSD is accompanied by pain, it is linked to poorer community functioning and lower life satisfaction (Bryant et al., 1999). The question arises what comes first – pain or PTSD. This study suggested that pre-fall pain may be a predisposing factor for PTSD, however pre-fall PTSD symptoms might also relate to increased pain experience. Dirkzwager et al. (2007) reported that PTSD drives pain, while Norman et al. (2008) suggested that pain leads to PTSD. Liedl et al. (2010) demonstrated that pain significantly impacts on PTSD development, and PTSD symptoms impact on pain experience. According to the researchers, reexperiencing triggers arousal, which in turn leads to avoidance. Hyperarousal plays a key causal role in the development and maintenance of pain over time (Buitenhuis et al., 2006; Liedl et al., 2010). Pain and hyperarousal initiate physiological responses such as muscular tension or increased heart rate and blood flow to promote escape and withdrawal response (Hoehn-Saric & McLeod, 1993). Liedl et al. (2010) reported a feedback loop in which hyperarousal increases pain, that in turn increases hyperarousal. It has also been found that, even up to 5 years post-injury, hyperarousal and avoidance have been linked to pain and disability (Andersen et al., 2011). Furthermore, avoidance has been associated with increased stress response (Waller & Scheidt, 2006). Since pain is highly distressing, it leads to avoidance (Liedl & Knaevelsrud, 2008). Thus, there appears to be a vicious circle of mutual maintenance of pain and PTSD symptoms.

### **6.3.2.3. Recovery**

Incorporating the SOC model to the analysis of the recovery stories allowed for exploration of strategies older adults apply in order to cope with their fall rehabilitation. It was assumed that individuals who apply more SOC strategies, would successfully recover from falls. The analysis focused primarily on narratives of the recovery, physical function and activity. In doing so, SOC was explored within the context of life stories, where the self seeks to continually develop. Narrative is a mechanism through which people can understand themselves as having a sense of self that endures over time without being fixated and unchangeable (Ricoeur, 1991). This interweaving of constancy and change may be particularly important in the study of ageing, as individuals strive to maintain their functioning in the context of changes caused by falls.

An alternative to the self that seeks to continually develop, is the self that seeks closure (Morson, 1994). Some people at some point in time might come to belief that their life story is over (Freeman, 2000). They may think that it is too late to live meaningfully (Freeman, 2000). That is, when individuals are no longer able to see any opportunities for development and growth for themselves,

then they enter “epilogue time” since their life stories have come to a conclusion (Morson, 1994, p.193). It implies that “no present action could make any real difference” (Morson, 1994, p.192), and that the “important story is over, nothing essential will change” (Morson, 1994, p.190). It is a particularly problematic issue since one of the most basic aspects of life is the capacity to reflect on it and attribute meaning to it (Bohlmeijer et al., 2011).

The analysis of the current study reflected the two approaches to the self. Individuals with the self that sought to continually develop, attempted to reconnect their broken threads (Ellis-Hill et al., 2008), move on with their lives, and actively approach their recovery. Individuals who sought closure, felt overwhelmed with fall-related consequences, their wounds from the past continued and in order to prevent having even more pain and hardships, they believed death could be a positive resolution to their situation. Thus, they passively approached their recovery.

#### **6.3.2.4. Being able to act**

Narratives about an active approach to recovery represented older adults who sought to stay in control of their lives. “Being able to act” described the desire to be able to regain pre-fall functioning, and continue the life older adults lived before falling. There was a positivity in the narratives of older adults that reflected their wanting to continue living life actively and autonomously. They were cognisant of the importance of the decisions that would shape their future. The SOC model shed light upon the process of fall recovery. By applying the SOC model, it became possible to understand the strategies older adults employ to cope with their recovery.

##### **6.3.2.4.1. Selection**

Goal planning is an important positive determinant of motivation for recovery (Maclean et al., 2000), and motivation has an important role in determining outcomes (Maclean & Pound, 2000). Goal setting can influence patient adherence to rehabilitation and ultimately improve patient performance in some specific clinical context (Levack et al., 2006). It enhances recovery, performance and goal achievement (Rosewilliam et al., 2011). In the present study, goal setting was often viewed through a pragmatic lens that allowed older adults to focus on the physical part of the recovery. It was reflected in older adults’ recovery aims, which included a limited focus on the mental side of recovery. This may be related to the fact that in Poland, goal setting is performed by health professionals without involvement of the patient, and it usually concerns only physical rehabilitation (Żak, 2005). It corresponds to the findings of the study of Ballinger & Payne (2000), where therapists constructed their accounts through risk discourse. That is, they described themselves as experts and older adults as unknowing and vulnerable (Ballinger & Payne, 2000).

Older adults focused on choosing the most important activities and goals; giving up activities that were no longer manageable, and choosing new goals. These are comparable to the strategies used by older adults and others with chronic health condition (Gignac et al., 2002; Janke et al., 2012; Rozario et al., 2011; Rush et al., 2011; Ryan et al., 2003). The use of selection for some participants implied an exercise of control even though they might not have had control over their losses. Participants often reported loss-based selection as their condition rapidly worsened. They needed to modify their expectations to suit their current situation and prioritise their goals. They gave up on some activity not so much because they were forced by their limitations, but because they decided it was best for them to do so.

The goals selected by participants, often expressed the desire to continue to live and function independently, and remain control of their lives despite potential long-term effects of fall-related injuries. Participants highlighted the importance of being able to continue to function as they were used to before falling. Although the desire to remain independent was universal, the degree to which independence was viewed differed. Independence was defined by older adults' beliefs and personal circumstances. Participants in this study strongly linked independence with their sense of purpose and ability to control their lives, which is in line with Berlin et al. (2009). It was the value older adults placed on independence in their current situation that affected their decisions regarding their recovery. Experiences of independence ranged from being able to return to work, to being able to do simple activities of daily living independently. Seemingly small daily acts can help enhance older adults' beliefs in their ability to function, which consequently affects their sense of control (Mallers et al., 2013). Gentleman & Malozemoff (2001) reported that the fear of losing independence was a greater concern than the actual fall itself. Yardley & Smith (2002) found that expectations of physical harm, loss of independence and functional disability were most commonly feared consequences of falling.

#### 6.3.2.4.2. **Optimisation and compensation**

Working on optimising health was identified as an optimisation strategy. For instance, Jade started a diet in order to improve her recovery. Eating a healthy diet has been previously recognised as an important activity (Hutchinson & Nimrod, 2012; Rozario et al., 2011). On the other hand, older adults who were healthier, used optimisation to the greatest extent. It is in line with Finnegan et al. (2019), who reported that health benefits and maintaining health were important motivators for older adults to exercise. Furthermore, Rush et al. (2011) found that healthier older adults were more likely to utilise optimisation to adapt their mobility to changes with ageing. Robinson et al. (2014) reported that older adults nominated a number of functional health benefits related to physical exercises which motivated them to continue with the prescribed exercise-regime.



Refining and acquiring new resources are directed at higher functioning (Riediger et al., 2006), which allow older adults to successfully deal with their challenging circumstances (Hobfoll, 2002). Some older adults engaged in leisure activities, such as dancing or cycling, which positively affected their mood. Engaging in leisure activities is valuable for older adults to maintain health and wellbeing (Hutchinson & Nimrod, 2012; Janke et al., 2012). Stevens-Ratchford & Lookingbill (2004) found that for individuals with arthritis, engaging in leisure activities helped them forget their pain and discomfort, making them feel better about themselves. Hutchinson & Nimrod (2012) reported that engaging in valued activities was a method of self-managing health and illness-related stressors among those living with chronic health conditions.

Family support was a frequently mentioned optimisation strategy by older adults. Social support has also been found to be crucial among older adults with osteoarthritis (Gignac et al., 2002). Loeb et al. (2003) reported that older adults with chronic conditions found informal relationships particularly supportive. Social support has been found to serve a protective function with respect to anxiety among individuals dealing with health problems (Ferreira & Sherman, 2007). Furthermore, a social setting is an important factor to stimulate exercise on a regular basis (de Groot & Fagerström, 2011; Hawley, 2009).

It is important to note here that social support can relate to both optimisation and compensation. Distinguishing between the two strategies requires some discussion. Compensation refers to substitutive processes that come into play when specific capacities are reduced (Baltes & Baltes, 1990). Freund & Baltes (1998) further distinguished between compensation and optimisation by suggesting that compensation relates to avoiding negative outcomes, and optimisation relates to positive outcomes. Instances where it is difficult to distinguish between optimisation and compensation are common in the literature (Rozario et al., 2011; Wilhite et al., 2004). Researchers have adopted various methods to address the distinction. Some considered whether individuals had experienced functional losses before categorising as compensation or optimisation (Rozario et al., 2011); while others considered increased effort, energy and time allocation as optimisation when the aim was goal achievement, or compensation when the aim was to counteract loss (Wilhite et al., 2004). Distinguishing between goal achievement and counteracting loss is the approach most consistent with the original premise of SOC. The role of social support can relate to optimisation and compensation. That is, asking for assistance when out of the house is considered a compensatory action, while asking for support from a family member with physiotherapy exercises relates to optimisation.

Participants who wanted to preserve their autonomy and had needs of being useful, applied various compensatory strategies. This is in line with Rozario et al. (2011) who reported that participants

who felt they could preserve their notions of independence, were more likely to use compensation. Bourgeois et al. (2003) found that successful management of activities of daily living was associated with high levels of compensation. Warner et al. (2017) found that older women with chronic illness reported greater use of SOC in everyday tasks in order to cope with physical stressors. Gignac et al. (2002) examined the use of SOC strategies by older adults with progressive disability. Although they found that all participants employed at least one adaptational strategy, the most utilised strategy was compensation in order to minimise losses.

#### **6.3.2.5. Being unable to act**

The theme “Being unable to act” discussed older adults’ acknowledgment of being unable to return to their lives they had previously lived. Woven throughout several older adults’ narratives was the devastating impact that falls had on their physical and mental health. They struggled with accepting the changes that their falls imposed on them. They faced not only physical challenges and pain, but also major psychological and existential challenges to their sense of self (Ellis-Hill et al., 2008). They did not look forward to their future, but sought a closure to their existence. Ehlers and Clark (2000) proposed the concept of “mental defeat” which relates to people’s inability to influence their fate, that consequently results in feeling weak and unable to protect themselves. Feelings of weakness elicited by previous aversive events, enhanced by fall-related injuries, increased older adults’ perception of being extremely vulnerable and unable to act effectively. As a consequence, they perceived their independence as limited and they felt helpless. They found hard to tolerate their condition and felt unable to successfully cope with their condition.

According to the life-thread approach (Ellis-Hill et al., 2008), an individual takes back control of their own life, focuses around their own perspective and identity. However, traumatised individuals often expressed their inability to control pain, falls and health issues. Rush et al. (2011) found that physical limitations was an important factor influencing older adults’ SOC use. Perceived lack of power can have detrimental effects on older adults’ expectations, resulting in worse health and psychosocial consequences (Hay, 2010). The combination of increased age and health issues resulted in a sense of loss as the freedom to choose and act was partially removed. That is, the array of older adults’ resources was limited. The resource-poor participants utilised fewer SOC strategies. One literature review (Zhang & Radhakrishnan, 2018b) found that the use of SOC was influenced by chronic illness-related losses, such as functional decline and disabilities. Gignac et al. (2002) found that frequency of using SOC strategies was related to difficulty in performing certain domains of activity.

Several older adults reported very limited use of the SOC strategies. They chose not to engage in recovery and did not select their recovery goals. They might have felt locked into the past and as a

result, they believed that trauma caused them negative and permanent changes in the self, and they assumed they would never be the same again (Ehlers & Clark, 2000). Indeed, the SOC model use is mood dependent (Weiland et al., 2011). They felt that their life goals were no longer important after aversive events they had encountered, and believed another struggle might happen to them (Ehlers et al., 2002). McMillan et al. (2012) attributed the unwillingness of hip fracture patients to engage in rehabilitation activities to patients' threat appraisals. The authors emphasised the importance of understanding more about older adults' concerns in order to increase self-efficacy (McMillan et al., 2012). In fact, the experiences of "mental defeat" and being locked into the time relate to low self-efficacy. Benight & Bandura (2004) proposed that PTSD symptoms affect self-efficacy by overwhelming coping capabilities. Higher levels of self-efficacy have been associated with the setting of higher goals and consequently higher performance (Locke et al., 1984). Self-efficacy is believed to reflect not only one's perceived ability, but also a motivational component - intentions for effort allocation (Kanfer, 1987). Thus, although self-efficacy is traditionally considered to be mainly relating to the ability component, it can also be expected to contribute to goal setting independently of ability (Locke & Latham, 1990). Furthermore, participants' fall-related self-efficacy seemed to be affected by their feelings of being in control. That is, having little sense of control, low self-efficacy enhanced by the presence of anxiety negatively affected the ability to define goals for falls recovery.

Compensation and optimisation are aimed at achieving selected goals. However, traumatised individuals did not nominate their recovery goals. Decreased resources affected older adults' ability to apply optimisation strategies, since optimisation presupposes having the resources to achieve higher levels of functioning. Individuals with limited mobility, poor health and excessive pain, such as Stephanie and Felicia, particularly struggled with using optimisation strategies in overall. This is in line with Rozario et al. (2011), who found that individuals with limited resources were least likely to utilise optimisation. It has previously been reported that for individuals with multiple chronic conditions, higher levels of disability, serious health events and negative outlook on ageing, the associations between SOC and physical functioning were undermined (Yuen & Vogtle, 2016).

The Life Thread Model assumes that family members play an important role in reconstructing threads (Whiffin et al., 2019). They can be considered "guardians of self-concept" (Whiffin et al., 2019, p. 24). Relatives have a role in biographical continuity by recognising threads from the past and present that remain connected to the future. They are active agents in the process of biographical disruption, continuity and reconstruction. In fact, social support has been associated with increased mental and physical wellbeing, including satisfaction with life, general levels of self-esteem and physical ability (Glass et al., 2006; Golden et al., 2009). On the other hand, poor social support

following trauma is one of the strongest risk factors associated with PTSD (Brewin et al., 2000; Ozer et al., 2003). The quality, size, diversity and the perceived helpfulness of the support network have been found to be implicated in the development and course of PTSD (Charuvastra & Cloitre, 2008).

Several participants reported dwindling social resources which was related to the death of their spouses, and unwillingness to continue their friendships, and therefore they lacked those active agents who could help them recreate their life threads. It was particularly evident in narratives of traumatised older women. Older women are more vulnerable to social isolation (Beal, 2006), often due to shifting social and demographic factors (DiGiacomo et al., 2013). Common age-related losses and transitions, such as changes in health, related to changes in routine and promote loneliness (Alpass & Neville, 2003). Poor physical health in older adults is associated with loneliness (Luanaigh & Lawlor, 2008). Loneliness can also be triggered by widowhood (DiGiacomo et al., 2013). All widows in the present study showed PTSD symptoms and poor SOC competency. Widowhood and poor support from children appeared to play a crucial role in participants' recovery. Widowhood brings with it significant upheaval resulting from emotional bereavement, social adjustment and poorer financial stability (DiGiacomo et al., 2013). Loneliness may increase vulnerability to disorders and depressive symptoms among the elderly (Cohen-Mansfield & Parpura-Gill, 2007).

Several older adults expressed fear of becoming immobilised, which was also reported by Kong et al. (2002). They found that fallers who had limited social networks were worried about becoming disabled, and individuals who had a decreased mobility level after falling were more likely to express that fear (Kong et al., 2002). Older adults in the present study, who had limited social networks, were concerned about becoming immobile. It may be related to the unavailability of long-term care services to many older adults. This compensatory strategy might be applied by individuals who do not receive family support. Anna struggled with finding help after her hip fracture and presumably moving to long-term facility could be a convenient solution. However, this is often not an option for older adults in Poland. The development of formalised long-term care was not possible until 1999 when the healthcare reform took place (Golinowska et al., 2014). The Polish long-term care system is closed, hard to access and among the poorest in Europe (Kouvonen, 2018). The eligibility criteria for long-term care services are not unified, but typically include lack of relatives and the services may not be granted for those who have relatives even when they are not willing to provide the needed help for their seniors in need (Kouvonen, 2018). Thus, older adults who live alone and encounter falls and injuries, face a major problem of not receiving any formal care after hospital discharge.

#### **6.4. Summary**

The aim of this qualitative research was to gain an understanding of how older adults experience their falls and fall-related recovery. After falling, older adults entered a new reality, where their bodies and minds were affected by their falls and injuries. Several older adults perceived their falls as any other accident in life. Falls affected their lives to a great extent, at least for a short time. They applied various strategies to their recovery and were motivated to regain their pre-fall functioning. On the other hand, for some individuals there was a sense that their lives had permanently changed, and there appeared to be no return to the lives they had previously lived. Their falls were distressful and often they did not receive immediate help. Furthermore, they experienced various negative events before falling. Thus, continuing their lives meant continuing emotional and often physical pain. They believed that death might be a positive resolution to their hardships. They often did not apply many strategies to their rehabilitation and had no goals for their recovery.

## **7. General discussion**

### **7.1. Introduction**

This thesis was motivated by recognising that falls can be a distressing event with severe consequences for older adults. Chapter 2 presented the importance of the problem of falls. The traditional view that fear of falls is always negative was challenged. It was argued that FoF might not be the only major issue after falling, but other aspects such as decreased falls-efficacy may play an important role after falling. It was shown that what people actually do may not be congruent with their physiological fall risk, but rather with their falls-efficacy. Thus, FE is an important construct to consider in the area of falls. Anxiety was presented as a factor which can make older adults feel less confident about their abilities. Excessive concerns, including concerns about falling, can take the form of an anxiety disorder. In fact, excessive fear and anxiety are central constructs in PTSD (Lissek et al., 2005). It was speculated that some fallers may experience PTSD, since PTSD involves fear (Simms et al., 2002; Zoellner et al., 2011). The review of the previous research on post-fall PTSD revealed that it is not an uncommon problem among older adults, yet the studies did not provide any clear conclusions on PTSD susceptibility, and they did not explore the influence of PTSD on older adults' lives. Therefore, chapter 2 nominated a gap in the current knowledge, whereby little is actually known and understood about the trauma associated with falls. Understanding the factors that contribute to PTSD development and its influence on fallers' lives is becoming critically important given demographic shifts that have resulted in older adults composing an increasingly disproportionate percentage of the European population.

The purposes of this final chapter are to 1) summarise the findings of the study, 2) discuss the key findings, 3) discuss the reflexive account, strengths, challenges and limitations of the research, 4) highlight the implications of this study, and finally 5) to identify areas for the future research.

### **7.2. Summary of research**

This research explored fall-related trauma among older adults. The quantitative study investigated factors related to PTSD development, as well as the impact of trauma on an older person's self-concept and strategies they applied in their recovery. The present study found that one in three fallers were traumatised by falls. Thus, the prevalence was higher than previously reported (Bloch et al., 2014; Chung et al., 2009; Eckert et al., 2018; Jayasinghe et al., 2014; Kornfield et al., 2017). Furthermore, the results of the quantitative study identified possible contributory factors to PTSD development, such as older age, female gender, previous falls, number of health problems, the length of time spent on the ground waiting for help, and injury type (head trauma, back injury and hip fracture).

Findings from the literature review led to the development of two models, where FE was a central factor. The first model was constructed around the relationships between FoF, anxiety and FE proposed by Hadjistavropoulos et al. (2011) in the Multifactorial Causation Model of Falls and Fear. Although not all variables included in the original model were assessed in this study, the relationships proposed required further explorations. Thus, the second model was proposed. It was constructed around the assumption that FE may be multidimensional. The model showed acceptable fit.

PTSD symptoms were found to have much influence on older adults. Even though all participants reported changes in their self-concept after their falls, traumatised individuals perceived their future self more negatively than their past self. For non-traumatised participants, their falls were not expected to make long-lasting impact on their self. They applied SOC strategies in order to cope with their rehabilitation. Traumatised individuals utilised significantly less SOC strategies than non-traumatised participants.

The qualitative study revealed that falls affected all participants' lives. After falling, older adults entered a new reality, where their failing body precluded them from actively participating in the world. They entered hospital settings, and after hospital discharge, they became dependent on others. They experienced much discomfort and pain. The majority of participants talked about fear and being cautious to prevent themselves from falling. They applied various strategies to their recovery and were motivated to regain their pre-fall functioning.

For half of the respondents, their falls were very distressful. They often reported previous adverse events and for some participants, their falls happened at a time when they were touched by the nearness of death. They believed they might have died as a result of falling, or underwent life-saving surgeries several months before falling. There was a sense of no return to their previously lived lives. Thus, continuing their lives meant continuing emotional and often physical pain. They believed that death might be a positive resolution to their hardships. They often did not apply many strategies to their rehabilitation and had no goals for their recovery.

### **7.3. Key findings of the research**

#### **7.3.1. Traumatic falls**

The present study sought to explore why some falls might be traumatic. Previous quantitative studies (Bloch et al., 2014; Chung et al., 2009; Eckert et al., 2019; Jayasinghe et al., 2014; Kornfield et al., 2017) provided mixed results on factors relating to PTSD development. Thus, the present research aimed to investigate previously nominated factors in the quantitative manner, as well as to qualitatively explore the possible contributors to PTSD. The quantitative study nominated old age,

female gender, previous falls, number of health problems, the time spent on the ground and injury type as factors related to PTSD severity. The qualitative study suggested that previous traumatic events might impact the experience of falls.

#### **7.3.1.1. Timing and quality of help**

The quantitative study revealed that the length of time spent on the ground waiting for help was related to PTSD severity. Furthermore, the qualitative study showed that inability to get help, prolonged wait for help, and delayed hospital attendance were common complaints among several individuals who struggled with their recovery. Moreover, the state of unconsciousness appeared to increase fall-related distress. Polly and Anna, as well as Felicia and Stephanie, fainted as a result of falling. The state of unconsciousness can be perceived as a biographical disruption because older adults lost their objective and subjective time, leading to confusion and uncertainty about the future (Parker, 1997). In this state of confusion, the world is not perceived in totality. Having had their memories fractured, they did not know what had happened to them, and thus, they were not sure what to do to change their situation.

Previous studies on post-fall PTSD reported no association between PTSD severity and the length of time spent on the ground (Bloch et al., 2014; Chung et al., 2009; Jayasinghe et al., 2014). Potentially, the inability to get up related to a lack of family members at the time of falling, which may potentially relate to severe anxiety while waiting for help, as well as feelings of helplessness, fear and horror that may lead to PTSD development (APA, 1994). This was particularly evident in the narratives of older adults who were alone at the time of falling. On the other hand, a companion might support an older person both physically and emotionally while providing assistance after falling (Chappell, 1991). Presumably, older adults may also expect their family members to provide them with first aid until they receive professional help. According to Kamińska et al. (2017), families in Poland, who take care of older adults, are well prepared to undertake non-professional care. The care for older adults is one of the major functions of the family and there is a common belief that family members are well-equipped to provide necessary assistance and support for an older person (Kamińska et al., 2017). The ability of the family to provide care is influenced by the socio-economic situation, their healthcare-related knowledge and skills as well as the emotional bonds between family members (Pluta et al., 2014; Pytlak et al., 2016). Indeed, the qualitative study participants asked their family for help, before seeking medical assistance.

Furthermore, the inability to get up without assistance may result in much fear towards future falls (Tinetti et al., 1993). It may lead to worries about not receiving help since dependency on others is associated with an inability to get up (Tinetti et al., 1993), and people who live alone may be particularly prone to such worries. This fear was commonly expressed by the qualitative study



participants. Elliott et al. (2009) found that older adults who live alone express more FoF than people who live with others (62.2% versus 48%). Therefore, people who live alone may be at risk of developing and sustaining fear towards future falls and not receiving help, and consequently they may be more likely to develop PTSD after falling due to prolonged wait for help.

The amount of time spent on the ground, as well as the time interval between falling and surgery, seemed to be crucial for older adults' fall recovery. Lee & Elfar (2014) suggested that hip fracture patients should be surgically treated within the first 48 hours of admission. In early 2000's "Out of Hours Surgery Service" was implemented in Israel in order to reduce the time interval between hospital admission and surgery, and it was found that hip fracture patients, who were treated within the service, showed decreased post-operative hospitalisation and lower post-operative mortality (Keren et al., 2017). Morrison et al. (2003) found that unrelieved pain following hip fracture was associated with increased hospital length of stay, delayed ambulation and long-term functional impairment. It may be speculated that the earlier surgeries are performed, the less pain is experienced by fall patients, and as a result, they may recover more successfully.

#### **7.3.1.2. Injury severity and pain**

The quantitative study found that PTSD scores were higher among patients with hip fracture, head injury and injury to the back. Furthermore, the qualitative study participants, who experienced head trauma, back injury or hip fracture, were traumatised by their falls, struggled with their recovery, and believed that death could be a positive resolution to their existence. It is in line with Woodruff et al. (2017), who found that the ones with head and spine injuries were at risk of worse psychosocial outcomes: lower quality of life and higher PTSD and depression. Previous research (Blanchard et al., 1997; Breslau & Davis, 1992; Dunmore et al., 2001) found a strong association between both severity of traumatic experiences, such as severity of physical injury, and severity of PTSD symptoms. Thus, there is the strong dose-response effect of traumatic load on symptoms severity. Previous studies on post-fall trauma found that back injury was a risk factor for PTSD development (Jayasinghe et al., 2014). Furthermore, Eckert et al. (2019) reported that traumatic stress was prevalent among hip fracture patients. However, the correlation between PTSD and head injury is a novel finding, which requires further exploration, especially since Jayasinghe et al. (2014) found that head injury was not related to PTSD.

The qualitative study revealed that head trauma patients struggled with much pain. It has been previously found that chronic pain among head trauma patients related to psychiatric disorders, including PTSD, in the first year postinjury (Stojanovic et al., 2016). Riggio (2010) reported that PTSD was associated with head trauma and identified recall of a traumatic event as a predictor of PTSD development. Participants who reported head trauma and back injury also complained about

great pain, which is consistent with the literature. One systematic review (Nampiarampil, 2008) found that approximately one in two people who experienced traumatic brain injury reported chronic pain. Another systematic review reported that chronic pain following traumatic brain injury was very common among individuals with PTSD (Lew et al., 2009). The authors suggested that these conditions rarely occur separately, and they usually occur in combination with one another. The qualitative study suggested that the unpredictability of pain is particularly distressful for fallers. Potentially, PTSD symptoms among head trauma patients may be enhanced by the pain experience.

### **7.3.1.3. Age and previous trauma**

The quantitative study revealed a significant correlation between PTSD severity and older age. Furthermore, several older female participants in the qualitative study struggled with their fall-related trauma and sought an epilogue to their existence. It is in line with Bloch et al. (2014) and Chung et al. (2009), who found that PTSD score was associated with age. Age is commonly reported to be correlated with PTSD (Chang et al., 2017), which makes age an important factor to consider in the area of falls. That is, age may not only be a risk factor for PTSD development, but it is also one of the key risk factors for falls (WHO, 2018).

In the qualitative study, several respondents encountered various traumatic events at different developmental stages. Moreover, the quantitative study revealed a significant correlation between number of previous falls and PTSD severity. Thus, it can be speculated that previous falls might have triggered PTSD development. Repeated trauma exposure and stress associated with it, have a cumulative damaging effect on people (Neuner et al., 2004). Kolassa et al. (2010) further found that higher trauma exposure was associated with not only higher prevalence of PTSD, but also with higher PTSD symptom severity in clear dose-response effects. Accumulation of adversity exerts a long lasting influence on functioning (Krause et al., 2004), and such accumulation of negative experiences is a very strong predictor for late-life anxiety (Dulin & Passmore, 2010). According to Neuner et al. (2004), there is a certain threshold of traumatic exposure, and people who reach the threshold, are likely to develop PTSD. The authors speculated that there is no ultimate resilience to traumatic stress. Older adults in Poland have undergone various traumatic experiences, which might relate to high prevalence of PTSD reported previously (Lis-Turlejska et al., 2018), and in the current study. Even though the WWII finished over 70 years ago, older adults in Poland underwent turbulent times in crucial developmental stages, since the post-war time did not allow people to regain their balance due to the lack of security and overwhelming poverty (Schier, 2018).

Potentially, for some individuals, their falls did not trigger PTSD development, since they were already traumatised by some previous events. Van Zelst et al. (2003) differentiated several ways PTSD can be encountered in old age. It can be a chronic disorder which emerged early in life. It can

also relate to symptoms that return after a new triggering trauma in later life. Symptoms of trauma may emerge for the first time years after the trauma exposure. Lastly, PTSD symptoms may emerge as a result of recent trauma. Moreover, it has been suggested that traumatic stress early in life can make older adults particularly susceptible to the various concomitants of ageing, such as loss of family members, increasing illness and frailty (Solomon & Ginzburg, 1998). A variety of studies have suggested that early life stressors may render individuals vulnerable in old age (Elder et al., 1994; Spiro et al., 1994; Wortman & Silver, 1989). Traumatized seniors can be confronted and overwhelmed by their early painful memories (Radebold et al., 2009). Since the respondents who lived through the WWII and the Stalinist era were very young at the time, they potentially were not aware of the severity of the events. Due to their young age, they might have lacked the capacity to understand the occurrences (Radebold et al., 2009). It has been suggested that older adults may not be aware of the impact that their psychological or physical symptoms might be linked to war-related trauma and they only become aware of it during therapy (Radebold et al., 2009). Old age, painful injuries, immobility and distress caused by falls, might have triggered such memories. Indeed, it has been previously suggested that older people who engage in life review as they age, increase the likelihood of trauma-related memories (Gagnon & Hersen, 2000). Thus, falls may not only trigger the new onset of PTSD, but they can also elicit symptoms of previous trauma. Given that age is a risk factor for both falls and for PTSD, it seems crucial to pay special attention to older adults who might have accumulated various negative experiences, such as accidents, disasters, interpersonal victimisation over their lifespan.

#### **7.3.1.4. Female gender**

The quantitative study revealed an association between PTSD severity and female gender. Moreover, several female participants in the qualitative study found hard to cope with their falls recovery and were traumatized by their falls, which was not reported by male participants. Women have two to three times higher risk of developing PTSD (Olf, 2017). Women tend to handle stressful situations differently and they are less likely to use problem-focus coping than men (Olf, 2017). Women are more likely to be exposed to more high-impact trauma (van der Meer et al., 2017). Comparing to men, women show higher levels of PTSD (Birkeland et al., 2017). Re-experiencing and anxious arousal are more severe in women (Birkeland et al., 2017; Charak et al., 2014). Birkeland et al. (2017) suggested that gender differences in PTSD relate to the way men and women remember and re-experience the event due to the common observation that women tend to be more physiologically reactive to trauma reminders in the acute phase and re-experiencing and hyperarousal are predictive of PTSD development (Haag et al., 2017). Furthermore, female gender is a risk factor for falling. Older women are more prone to falling (WHO, 2018). Women have more risk factors for falling than men (Arkkukangas et al., 2020). That is, women are at a particular risk

for PTSD development and falling, which may potentially severely affect their functioning and wellbeing.

#### **7.3.1.5. Health**

The quantitative study showed a correlation between PTSD severity and number of health problems. Furthermore, frailer participants in the qualitative study did not actively approach their recovery and sought an epilogue to their existence. Poor self-perceived health is associated with increased fall risk (de Almeida et al., 2012), and PTSD is related to poor health (Schnurr et al., 2004). Schnurr et al. (2004) proposed a conceptual framework describing biological, psychological, behavioural and attentional mechanisms by which PTSD might lead to worsening of physical health. For instance, psychological influence of PTSD would lead to avoidant coping strategies, which may result in delayed seeking health advice. Zen et al. (2012) demonstrated that individuals with both PTSD and heart disease were more likely to be physically inactive and showed poor medication adherence. Moreover, PTSD is an independent factor for coronary heart disease (Edmondson et al., 2013), while heart disease is a significant risk factor for falling (Ek et al., 2019). Thus, poor health is not only related to increased fall risk and PTSD severity, but also the symptoms of PTSD may impact an individual's health, which creates a vicious circle of poor health, higher risk for falling, and enhanced traumatic stress symptoms.

### **7.3.2. Impact of falls and fall-related trauma on older adults**

The second aim of the present research was to explore the impact of falls and fall-related trauma on older adults' recovery and life. The quantitative study sought to investigate the influence of fall-related trauma on the SOC strategies utilisation and the self-concept. Furthermore, it aimed to explore how fall-related constructs are affected by the PTSD symptoms (fear factor and dysphoria). The qualitative study explored the impact of falls in the lifetime context of an older person's life.

#### **7.3.2.1. Post-fall falls-efficacy**

The following section discusses the results of path analyses which were conducted in order to explore how PTSD clusters operated with fall-related constructs. Delbaere et al. (2010) demonstrated that older adults' perceived falls-efficacy affects their functioning, despite their physiological status. FE is a crucial construct in the models since it reveals if a person believes he or she is able to participate in specific activities without falling (Tinetti et al., 1994). Thus, FE is an important construct to consider in recovering older adults.

##### **7.3.2.1.1. Protective role of fear**

Traditionally FoF is perceived as always negative, and no magnitude of it, such as protective-maladaptive is predicted by the theory (Adamczewska & Nyman, 2018), but it appears that the

concept of FoF is more nuanced. Fear is a basic, adaptive, and protective response toward a current identifiable threat (Barlow, 2002), which implies a positive role of fear. FoF can prevent older adults from undertaking relatively risky activities. In the second model proposed in the quantitative study, control beliefs (repeatability) determine the way FoF is experienced. That is, the less controllable the fall-related situation, the more likely FoF is experienced. FoF may protect one from undertaking the activity that may cause them falling. The protective role of FoF was evident in the narratives reported in the qualitative study. Older adults talked about their FoF in terms of specific situations which could cause them falling. Since the respondents were recovering from their injuries, it could be assumed that their FoF played a protective role in their recovery. It is in line with Allali et al. (2017), who suggested that FoF acted as a protective mechanism for individuals with walking difficulties.

#### 7.3.2.1.2. **Maladaptive fear**

On the other hand, excessive fear may compromise FE and prevent individuals from doing something that may not necessarily lead them to falling. For several participants of the qualitative study, their fear remained after the recovery had ended, and it prevented them from undertaking certain activities, affected their functioning, and even caused them physical pain. Even though they physically recovered and were able to perform given activities, they did not perform them, or performed them with much distress. It appears that they might have associated certain places or situations with falling, which resulted in their excessive fear when faced with such stimuli. Their fear was highly contextual, e.g. fear of slippery floors. It is in line with Foa & Kozak (1986), who proposed that there is a certain pathological fear structure in PTSD, where a number of stimulus elements are erroneously associated with danger. Building on the earlier work of Lang (1979), Foa & Kozak (1986) proposed that the experience of a traumatic event results in the formation of a fear network in memory. Under extreme traumatic stress, perceptual, cognitive and emotional features of the event, together with the physiological response pattern, are stored in memory. As a result, a network associated with the traumatic situation is formed. Thus, traumatised people process non-threat-related information as a potential threat, which in turn can amplify the fear (Chemtob et al., 1988). The representation of how a person behaved in the presence of trauma becomes paired with a lack of the ability to cope with the trauma (Adamczewska & Nyman, 2018).

Several respondents talked about being fearful in certain situations that were not linked to their falls. It appears that they might have generalised their fear to a broader set of stimuli. It occurs when a fear response acquired to a particular stimulus transfers to another stimulus, ultimately creating a fear network that is too broad (Hermans et al., 2013). The induction of fear by a wide range of stimuli poses much burden on a traumatised individual to the point one may not feel safe in every-

day life (Hermans et al., 2013). Since the fear network became broader over time, there is some risk that it may continue to grow, and another sets of stimuli would be attached to it, which consequently would compromise older adults' falls-efficacy and functioning.

Several participants of the qualitative study alluded to their perception of ongoing threat (Dunmore et al., 1999). They talked about nightmares or feeling jumpy. In PTSD, fear responses are intense and persist over time (Jovanovic et al., 2009), and cause much burden and feelings of unsafety in every-day life (Hermans et al., 2013). The world is then perceived as a dangerous place. Traumatized individuals are unable to control their flashbacks, yet by avoiding trauma triggers they can purposively decrease the probability of experiencing one (Brewin, 2014). That is, individuals with high levels of fear factor that involve re-experiencing, hyperarousal and avoidance, tend to show low levels of FE, because they may feel unable to face fall-related triggers. They may want to avoid an activity in order to release negative sensations associated with it. In this context, FE refers to perceived specific and actual abilities to perform current activities.

#### 7.3.2.1.3. **Anxiety**

In the Multifactorial Causation Model of Falls and Fear (Hadjistavropoulos et al., 2011), FoF and anxiety act as a cluster influencing falls-efficacy. The current study explored the relationship and revealed a strong path between dysphoria and FE. It appears that dysphoria impairs FE to a greater degree than it has been previously assumed. Individuals with low self-efficacy tend to magnify the severity of the threats and worry about potential threats that may never occur, which consequently impairs their functioning (Benight & Bandura, 2004). The perception of no control over a stressor has been found to be associated with increased anxiety (Endler, 2000). Bandura (1983) suggested that self-efficacy varies inversely with anxiety during stressful situations.

FE refers to perceived potential abilities to manage fall-related tasks. That is, anxiety affects the beliefs that one is able to undertake some potential activities, and when anxiety is high, it limits older adults' participation in daily life activities (Adamczewska & Nyman, 2018). Low self-efficacy has been described as a feature of anxiety disorders (Maddux, 1991). It is in line with Jiang et al. (2016), who found that psychological distress predicted FE at 6 months follow-up among nursing home residents. Benzinger et al. (2011) found that despite functional recovery, no improvements were shown in FE scores and depressive symptoms four months after hip fracture had occurred, and depression and falls-efficacy were significantly correlated. Moreover, Rivasi et al. (2019) found that depressive symptoms were predictive of FoF development (assessed with a falls-efficacy scale) at a two year follow-up, and suggested that a drop in FE occurred as a result of a burden of depressive symptoms. Depression is an anxiety disorder, therefore the tools used to

assess depression might have captured feelings of anxiety (Goldberg, 2010). Thus, anxiety appears to severely impair self-efficacy and therefore it needs to be addressed in falls recovery.

### **7.3.2.2. Life after falling**

This research provides insights into how older adults experience falls and falls recovery, and how they wish to continue to live their lives. It highlights the importance of remaining independent and its impact on an individual's sense of self. Older adults after unexpected, potentially life-threatening injuries are known to experience not only physical, but also psychological difficulties (Grossman et al., 2000). It may challenge one's assumptions and beliefs about the world and the self (Janoff-Bulman, 1989). The lack of congruence in the patient's eyes can create a sense of meaninglessness (Horowitz & Kaltreider, 1980; Thompson & Janigian, 1988). Maintaining a sense of continuity is essential to older people's sense of successful ageing (Rossen et al., 2008).

The quantitative study demonstrated that for non-traumatised older adults, their falls did not affect their future self-concept. The narratives of an active approach to the recovery revealed that the respondents applied various SOC strategies in order to regain their pre-fall status. They selected goals for their recovery, yet they accounted for the possibility of not returning to their pre-fall state. They seemed to accept that, as long as they were able to continue to function independently. Thus, to re-connect their past-self with their future-self, even though it meant lowering their expectations. It is in line with Charmaz (1987), who suggested that adjusting to a health problem is sometimes presented as occurring through a lowering self-expectation. By setting up a goal that is perceived to be achievable, older adults might hope for regaining control over their bodies. It appears that for participants the main aspect underlying the application of SOC was the need for independence, rather than fully restoring their pre-fall status.

The quantitative study found that falls affected traumatised older adults' future self-concept. That is, traumatised older adults believed their future self would be more negative than their past self. The qualitative study revealed that several older adults struggled with picturing their future, since their present was highly distressful for them. It is in line with Ellis-Hill & Horn (2000), who found that individuals' lives were affected by their stroke, and suggested that stroke patients' sense of coherence with their past was compromised and therefore their future became unpredictable. The authors pointed out that individuals who cannot create their future self, experience anxiety and become unsure how to act.

There seems to be the paradox in PTSD whereby individuals are anxious about their future even though the trauma lies in the past (Ehlers & Clark, 2000). The qualitative study revealed that traumatised individuals appeared to lack time perspective. They tended to use present tense in their

stories, which may relate to their feelings of re-living the experiences as this was not the part of their past, but also their present and presumably their future. Older adults' reluctance to think about their future, might be related to the feelings of threat, either external threat to safety, or threat to the self and the future (Ehlers & Clark, 2000), and as a consequence, the world was no longer a safe place for them. They felt that "worse is to come" leading to the perception of future threat (Ehlers & Clark, 2000). It perhaps resulted in their need to dissociate themselves from that anxiety to the point their perceived death as a positive resolution. Perhaps they expected their future to be even more beyond their control and their death could result in an end to their hardships. Death was desirable but only without further struggles and any other long-term conditions.

The quantitative study revealed that traumatised individuals applied significantly less compensatory strategies than non-traumatised participants. The qualitative study demonstrated that even though all respondents applied compensation to their recovery, there were differences in the quality of the strategy utilised. It may be speculated that compensatory actions may not be equal. The aim of the compensation is adaptation and therefore it is associated with success. Compensatory strategies, in which an individual takes an active role, may potentially be considered by them as an achievement. Strategies applied to keep participants closely to their pre-fall selves, were observable across stories of active approaches to falls recovery. Compensatory actions were applied by participants as a means of restoring balance. That balance was related to their pre-fall status in which they viewed themselves as "able" compared to post-fall "unable". By applying the strategy, they ought to restore, or reconnect to their pre-fall self. Compensatory competency is therefore linked to the consequences of falling being less global, less stable and less debilitating. Even though all participants applied compensatory strategies to their recovery, several participants seemed to be less connected to their past competent selves, and the compensatory actions did not influence their perceptions over the consequences of falling as reversible, at least to some extent. Perhaps seeing the dichotomy between the past "able" self and their current "unable self", enhanced their anxiety and their catastrophic thinking over the future, such as being even less "able".

Individuals who felt unable to act often did not nominate any goals for their recovery. It appears that they might have some short-term goals or situational goals, that they then applied the compensatory strategies for, but the lack of the overall recovery goal might have potentially influenced their lack of feelings of achievement. A more passive compensatory action might be related to a situation in which a barrier is removed (Salthouse et al., 1990), such as using crutches. Removing the barrier was applied to accomplish the activity, hence to meet the immediate goal. However, they might not perceive their compensatory actions as step by step actions that would close the gap between their current status and their desired outcome, i.e. their successful recovery. Instead, they may associate



the actions, such as crutches, with their declining bodies and consequently become more pessimistic about their future, since they may require even more assistive devices as they become frailer.

The active attitude towards the recovery is also linked with the optimisation strategies. The quantitative study demonstrated that traumatised participants applied significantly less optimisation strategies than non-traumatised individuals. Furthermore, the qualitative study revealed that individuals who were traumatised by their falls, struggled with their recovery and sought an epilogue to their existence, consequently applied fewer optimisation strategies than other respondents. Optimisation is linked to the ability of the individual to modify the environment to create more favourable or desired outcomes for the self (Coleman & O'Hanlon, 2017). However, the participants who reported no goal for their recovery, did not report much use of the strategy. Optimisation competency depends heavily on the availability and adequacy of personal resources, social opportunities and individual life stories. Overall, the strategy requires suitable health, environmental and psychological conditions (Baltes, 1993). Thus, the significance of resources cannot be overstated.

#### **7.3.2.3. Importance of resources**

The qualitative study revealed that the employment of the SOC strategies was influenced by people's contextual realities, which include their access to, and the availability of resources. Lang et al. (2002) found that individuals who were resource-rich were more likely to use SOC strategies than resource-poor participants. Goals, that people choose, are determined by economic, social and physical factors (Russell, 2007). The less influential these factors are in the process of goals selection, the more freedom people have to choose their goals (Freund, 2002). Some resources are not within older adults' control such as the availability of specialised healthcare, psychotherapists, community services for the elderly or efficient public transportation. Resources that included family and financial security afforded respondents some means to achieve their goals.

Falls can affect finances of older adults. Robson et al. (2018) reported that falls had a real financial impact on older adults and their behaviour. Expenditure for health care can also be an important stressor for some individuals (Leive & Xu, 2008; Vancampfort et al., 2017). Financial situation of participants affected their use of SOC strategies. Participants who had an access to financial resources, reported optimisation as their adaptational strategy. They were able to choose from a wider array of options. Often participants' choice of means affected their goals and prioritising which goals to pursue. For example, wealthier individuals had a better access to paid medical care and pain-relief devices. Although other participants also aimed to decrease their pain, their options were limited by their financial situation. This is in line with Rozario et al. (2011), who reported that individuals that were financially more able, had more options to choose from, which made them feel

more independent. They were also able to continue their meaningful activities despite physical (e.g. pain), or psychological limitations (e.g. fear), since they were able to afford substitute devices which addressed their limitations. On the other hand, individuals with limited finances struggled with affording medications and therefore other strategies, such as substitutions, were not prioritised by them. This is in line with Robson et al. (2018), who found that older adults with financial constraints had to make financially driven decisions that were not always in their best interest. For instance, individuals who were unable to pay for support, were often forced to perform tasks that put them at risk (Robson et al., 2018).

In the present study, it appears that one of the most crucial resources was family. Help from others emerged as one of the main strategies applied by older adults. This is in line with Siren & Hakamies-Blomqvist (2009), who reported that older adults used help to maintain self in the ageing process and to avoid being categorised as “old”. Participants appreciated and accepted support from their families. This is in contrast to Robson et al. (2018), who found that older adults reported unwillingness to engage family members into their recovery. It was related to their perception that their relatives were busy with their own lives and asking for help would create an extra burden on them.

Diminished social interaction can have detrimental effects on older adults’ wellbeing. Walker (2011) emphasised the need for social interaction, since it places individuals into groups from which a sense of identity can develop. Social interaction enables older adults who have fallen to share experiences, gain assistance and encouragement (Gardiner et al., 2017). However, some older adults reported that they did not wish to see people, which might relate to alterations within relationships where they were unable to function as they had pre-injury, since they needed emotional, practical or financial support. This is particularly alarming, since Hall et al. (2015) reported that loss of social resources predicted PTSD. Utz et al. (2014) found that greater social support, especially coming from friends, was associated with lower levels of loneliness and higher levels of emotional wellbeing. That is, friends play an important role in older adults’ recovery since friendships are formed based on mutual interest and choice. Furthermore, friends are not as socially obliged as relatives to visit fallers, and such visits may be more appreciated by an older person.

#### **7.4. Summary**

The analyses of the quantitative and the qualitative studies revealed that injurious falls have a significant effect on an older person’s life. Falls can be both trivial and traumatic, yet the perception on them is related to each individual’s outlook on their life. That is, the way one approaches their recovery is heavily affected by their personal circumstances. Figure 16 visually presents and concludes the findings of the present research. The metaphor behind the graphic is a balance scale.

It consists of various factors that relate to one's approach to their recovery. The first factor refers to one's past life – their previous aversive and potentially traumatic experiences, such as war trauma, widowhood, or previous injuries. Given the cumulative damaging effect of trauma on people (Neuner et al., 2004), older adults may find harder to cope with yet another struggle in their life. The second factor relates bodily sensations caused by falls. Presumably, the more severe they are, the more effort one needs to devote to their recovery. The third factor relates to psychological impact of falls, such as anxiety, FoF, decreased falls-efficacy and PTSD. Potentially, older adults who experience severe psychological issues after falling may struggle with their recovery. The last factor relates to resources, such as demographics (e.g. health, marital status), social support, financial situation, access to healthcare, public transportation, or social services.



Figure 16. Visualisation of the impact of falls on an older person's life.

One end of the scale represents recovery, while the other end represents narrative closure and seeking an epilogue to one's existence. Each factor has a potential to move towards one or the other end of the scale, affecting the overall balance of the scale and consequently, the ability to act. They also can counterbalance other factors, depending how important each factor is for an individual. When all factors are in concordance, it is very likely that an individual will successfully recover from falls, or will seek narrative closure. However, falls recovery becomes challenging when the factors are not in concordance. The interplay between the factors therefore determines the success of falls recovery.

The present research presented that older adults after falling enter a new reality in which they struggle to maintain control over their recovery and lives. Personal control has much influence on physical and mental health, and ultimately on the ageing process itself (Mallers et al., 2013). It is a fragile process of maintaining balance between their expectations of what their life should be, and what they can achieve. Their ability to act is heavily affected by several factors, thus, it is a dynamic

process which is not set in stone. It is a process of constant responses towards challenges that older adults face. The new reality that an older person faces involves different issues and struggles, than their previously lived lives. Injurious falls do not only affect the body, but other aspects such as the mind and social participation. Thus, the recovery is not only limited to one's ability to physically recover from fall-related injuries, but it relates to the achievement of life goals.

## **7.5. Reflections on the research**

The concept of reflexivity is used to emphasise the importance of self-awareness, political and cultural consciousness, and ownership of perspective within qualitative research (Patton, 2002). It allows for a consideration of how the researcher and the research process have shaped the data, and how prior assumptions might have influenced inquiry (Mays & Pope, 2000). This section reflects on how my personal perspective might have influenced the research.

This PhD sought to explore post-fall PTSD. The two topics, falls and PTSD, were in fact a challenge for me. As someone who grew up in Poland where falls were not recognised to be a significant problem amongst older adults, it was surprising to me to learn that falls may have such serious implications during my undergraduate course in the UK. Once I had learnt that falls are very common and can have very serious consequences for older people, my perception on falls changed drastically. However, I was familiar with the concept of traumatic stress. As a grandchild of a person with PTSD I had my personal thoughts and ideas about it. My grandmother, who was enslaved to Germany during the Second World War, suffered serious injuries during that time that caused her many health problems in her later life, including giving birth to two stillborn sons which was also traumatic to her. These subjects were always taboo and we were not allowed to talk about it in her presence. Even though she passed away few years ago, I still remember her emotional reactions to the reminders of the war, the times she talked to herself for no reason, at least that was what I thought, or sleepless nights when she would walk around the house. I always wondered, "why is she like that?". My uncle was also enslaved during the war but he talked about that experience a lot without such reactions. My grandmother had many health problems but she never seemed to care. I could not understand why she would not see a doctor or take medicines. When I met many older adults during the data collection, some of them reminded me of her, with their war experience, reluctance to cope with their health situation or emotional reactions. I acknowledge that having that experience might have influenced the way I interpreted the data since I empathised with my participants and tried to find explanations for their behaviours from my own experience.

In fact, many war survivors that I have met did not want to talk about their experiences. Thus, I decided to collect the interviews for the present study to elicit older adults' narratives and to actually hear their voices from a different perspective – of a researcher. It appeared to be appropriate for the

study, as the focus of this research was the impact of falls on older adults, thus, a detailed exploration of participants lives was required. This was my first study in which I collected qualitative data. I had to step outside my comfort zone and enter the world of qualitative research. I faced with several problems. The first was that I did not know what the best approach was, the second was that I did not have any experience as a qualitative investigator. Furthermore, I did not know how my pre-existing perspective would influence the research. There are numerous methods available to choose from and I did not know where to start. I had to acknowledge the fact that there was no “correct” methods.

Returning to Poland to collect the data was another shocking experience to me since neither older adults, nor some of the health professionals that I met, seemed to have the knowledge on falls. I recognised the need to avoid making assumptions that despite the fact that many things have changed in Poland since I had left my country, the awareness of the problem of falls was not one of them. As a positive, I realised there was no stigma attached to falls and decided to build on that since I assumed that without the stereotype attached to falls that has been reported elsewhere, older adults might be less traumatised by their falls because of their lack of awareness of the consequences that falls may have. When approaching older adults, I decided to ask them about their falls as just another accident that happened in their lives.

I was aware of my role as researcher, yet one of the challenges was the fact that some participants treated me as a source of information or as a therapist. Some of hospital patients perceived me as a healthcare professional or a link with the hospital and attempted to gain some knowledge on their condition, or get better treatment. This was particularly evident at one of the hospitals, where I was required to wear a uniform. Since I conducted my pilot qualitative interviews at hospital, I became aware that participants’ narratives might have been influenced by the hospital settings and patients’ perception on me as one of the hospital staff members. Thus, they were reluctant to express their complains with e.g. their treatment. At that stage I decided to conduct the interviews at participants’ homes.

I encountered various challenging situations at hospitals that enabled me to see the severity of the problem of trauma. I met many older adults, who clearly seemed traumatised. They were willing to talk to me, since they considered me a therapist or a professional, yet their narratives are not included in the thesis, since they refused their participation. Thus, I am well aware that the problem of post-fall PTSD is more severe than it is presented in the thesis. It is particularly problematic among resource-poor individuals. For instance, Anna, who took part in this study, was a widow who lived alone, yet she was financially able to afford a day-care nurse. However, I met older adults who did not have that option. One of the most difficult situations that I encountered, involved a 90 years old

lady with a hip fracture, yet it was decided that no surgery would be performed on her. She believed I was a health professional and she begged me, with tears in her eyes, for asking her doctor to let her stay at hospital, since she lived alone and there was nobody to take care of her. Until now this memory gives me much distress.

Many patients asked me to fill in the survey for them, due to their injuries or pain, and therefore we often talked about the topics included in the questionnaire and beyond the questionnaire. They tended to feel lonely and isolated in hospital settings, and they perceived me as a good listener. Some of the hospital patients, who were traumatised by their falls, were affected by the questions and decided to withdraw their participation. However, none of the participants withdrew their participation from the qualitative interviews. I would like to believe that they knew that I would listen to their stories without making any assumptions or judgments.

Incorporating qualitative approaches to the research attempted to give the greatest understanding of post-fall PTSD. I expected the interview process to be learning curve for me but it was rather a moulting-like experience. My first interview with a traumatised participant was the first big step for me. Learning she passed away was the next step. I understood even more how serious that issue was and how fragile these people were. Furthermore, my father's bereavement over that period, who was in the same age category as my participants, influenced my feelings towards my male participants. Having an apron with my name on it provided by the hospitals, helped me keep professional distance from them while collecting the data, but affected me in a long term. Interviewing them at home was a challenge for me and that might have influenced the process since perhaps they sensed my awkwardness in their presence. It may be the reason why the interviews with two male participants were short and to the point, yet it may just be my over-interpretation. However, I do acknowledge the emotional state I was in and potentially its influence on the data collection.

Within the interview, I encouraged participants to talk and share their narratives without interruption. I believe that by applying a narrative approach, people felt free to talk in their own way, and by being non-intrusive they felt able to talk about topics important to them. Some respondents became emotional at times, but I did not want to change the subject. There were however several exceptions. One of them, which is included in this thesis, is Stephanie and her story about the Red Army soldiers. She became very tearful and this is when I changed the subject. I suspected how the story might have ended, but it was also the story I was reluctant to hear, since I had heard similar narratives from one of my neighbours. I acknowledge that I might have misjudged the situation, yet I believed changing the subject was the best thing to do at that time, for both – the participant and me.

On the other hand, some participants appeared to attempt to “stay strong”. This was particularly evident in the narratives of male participants. I had an impression that they might have felt that their masculinity was challenged by their temporal disability. Perhaps, they held the traditional view on gender roles, according to which men are supposed to be strong and avoid sharing their emotions. That may be one of the reasons their narratives were rather short and to the point, so they could be seen as they were managing their condition well. Perhaps, one of the reasons for that was the fact that they talked to a female researcher in her twenties. The accounts given to a male researcher might have been different.

Overall, I feel like my approach to the qualitative interviews and results was as balanced as I was able to make them. I have presented these results to a range of audiences and they have been positively received. Usually people have wanted to know more, in particular, healthcare professionals wished to learn more to apply some of the findings to their own practice. I wanted to create space for participants voices to be heard, to gain better understanding why they experience their falls the way they do. I feel like my research has achieved that aim and as such has been of value.

## **7.6. Strengths**

By exploring the impact of fall-related trauma on older adults, the study provides insights on why some older patients may develop PTSD symptoms after falling, and how the symptoms impact their lives. It was shown that there was a lack of enough knowledge regarding post-fall trauma among older adults. The outcome of this study, therefore, addresses the knowledge gap whilst also giving an understanding of how older adults are affected by fall-related PTSD symptoms. This knowledge is important in enhancing care for older people who struggle with their recovery.

The mixed methods approach represents a key strength of this thesis; this supported gathering of rich in-depth data. This approach was adopted because of the dearth of existing literature focusing on fall-related PTSD. The mix of methods that were used, targeted the elicitation of narratives; this was achieved, and a substantial amount of data was generated. This study provided an in-depth understanding of the experience of falls. The use of the narrative approach in this study allowed for the research topics exploration within a specific period between hospital discharge and physical recovery, whilst also finding out about the impact of past experiences. The information about the effects of previous aversive events was examined, which facilitated an understanding of any impact they might have made on participants’ lives. Furthermore, the mixed methods facilitated the exploration of fall-related experiences, for example, the SOC model helped to frame strategies older adults apply in their recovery. Furthermore, it allowed for exploration of data generated from one method in the context of data generated from the other method.

The recruitment strategy represented another key strength of this research. By making regular visits to hospitals, I was able to familiarise myself with the environments that older adults suddenly entered. It enabled me to see the challenges and opportunities they faced at hospital. Participants were recruited through the hospital staff. This strategy enabled me to gather their views on older adult care and their perception of older patients' needs. They were an excellent source of knowledge, which I utilised in the data analysis. For instance, recovery goals selected by healthcare professionals and older adults were not congruent, since doctors usually focused only physical rehabilitation.

The approach to the data collection allowed for the establishment and development of my relationships with research participants. That is, I was able to observe their recovery journey at three points in time - their hospital stay, hospital discharge and after their recovery ended. The time spent with participants enabled greater access into their lived experiences. These relationships supported data gathering which added additional richness. Furthermore, by familiarising myself with the environments in which participants lived, I was able to observe their environment as a place in which to recover from falls.

This study also contributed to current research by highlighting how cultural factors can impact the experience of falls. There is a lack of awareness of falls among older adults in Poland. They are viewed as any other accident in life. That is, falls are not commonly associated with frailty and old age in Poland, and therefore, they are not stigmatised. This echoed in the quantitative data where only 4% stated that they had fallen because "they were old". Thus, this study participants were very open about their falls. They did not seem to express much shame and embarrassment when describing their falls. It could be speculated that this lack of awareness of falls may benefit older adults since they may not experience shame or embarrassment of attending fall interventions, or using fall-preventing devices.

### **7.7. Challenges and limitations**

Recruitment presented a challenge in several ways. One of them was related to time constraints. Since the study took place in Poland, the time devoted for data collection was limited. Thus, obtaining a larger sample for the quantitative study was virtually impossible. Another challenge related to unwillingness of patients to participate in the study. Older adults often complained that they did not want to sign any documents. They expressed confidentiality concerns and they were worried that their data could be used for inappropriate or even illegal purposes. Furthermore, there were patients who were unwilling to take part in the study since they were too distressed. Potentially, it might have affected the overall findings, since some patients with apparent PTSD symptoms, judged by hospital staff, rejected their participation and were not assessed.



Managing interview time and not over-burdening participants were also key challenges. Some interviews were long, lasting up to five hours. Interviews presented participants with the opportunity to share their experiences freely, and for several participants telling their stories related to therapeutic purposes. It was often stated that they were able to speak about the events they had not talked for years. It supported the development of a trusting and reciprocal relationship, which facilitated richer data. However, for some participants interviews elicited distress, or they became annoyed with some of the questions. In some cases it was very difficult to build rapport with the respondents.

The findings of the qualitative data are based on data gathered with eleven older adults. Although the sample size is typical for qualitative research, the sample remains diverse in terms of age, sex, education, injury type and severity. However, the sample was homogenous in terms of living in the same voivodeship, home ownership and ethnicity. The limitation of the sample means that important views may be missing that could have implications for data analysis and findings. For example, views on loneliness might be different among inhabitants of big cities. Furthermore, the small sample size and characteristics, as well as the exploratory nature of the qualitative study, limits the generalisability of the findings. The views and experiences shared by participants may not be shared by older adults living in other areas of Poland, or further afield. The findings reveal important points of convergence in individual experiences that would be applicable beyond the participants in this research.

Moving forward, it would be useful for future research to understand the gender differences in older adult's PTSD experience. One of the weak sides of the study was the fact that there were not many male participants with PTSD symptoms in the quantitative study and no male participants with PTSD symptoms in the qualitative study. The underrepresentation of males and overrepresentation of females can be problematic leading to misinterpreted information about the ageing population. Potentially, older males may experience their trauma differently, they may focus on different aspects, or apply more coping strategies. Future research should examine any differences among men in their risk factors to develop and their responses to PTSD symptoms.

One potential issue with representation and this study is that the study was conducted at general hospitals. As such, the findings did not consider the experiences of individuals who had been exposed to less severe injuries which did not require hospital stay, and therefore may not develop PTSD, since this study revealed that individuals with more severe injuries reported more severe PTSD. Furthermore, this study participants were predominantly first-time fallers who sustained injury which required hospitalisation. It might be possible that having a fall for the first time and experiencing severe injuries that required surgical treatment, may potentially be more traumatising

than first falls that did not relate to serious physical injuries. Exploring the assumption was beyond the scope of this research, yet the findings of this study may not be applicable to such individuals.

One of the limitations of the qualitative study is a possibility that older adults underreported their use of adaptational strategies as they might have recalled the most silent aspects of their adaptations. It has been previously cautioned that some adaptational processes may be more amenable to recall than others (Gignac et al., 2002; Rozario et al., 2011). Furthermore, participants were not explicitly asked about their SOC strategies use, but about their coping strategies in overall. Thus, it may be possible that participants applied more strategies to their recovery, yet talked most extensively about the ones which made much difference to them.

Another limitation relates to the assessment of fear of falls and choosing a tool with poor sensitivity. The lack of standardised definition of FoF has led several different definitions emerging over the past decades and subsequently several constructs developed based on these definitions (Greenberg, 2012; Jørstad et al., 2005). Many instruments have been developed to assess FoF or the different constructs associated with FoF, which has resulted in confusion of what instruments to use and a variety of modified versions being developed (Jung, 2008). This lack of consistency in research on FoF makes it difficult to compare results of studies when different instruments have been used, which was evident in the chapter 2. The different assessment tools used in studies do not always measure the same construct, which consequently affects the results interpretation. Much caution was paid in the thesis in order to avoid the confusion. One of the reasons for choosing the one-item tool to measure FoF was to avoid the confusion with other concepts such as falls-efficacy. The tool did not define fear of falls and therefore left the interpretation to the study participants, which may not necessarily be congruent with the academic or medical perceptions on FoF.

This study lacked a separate assessment of anxiety. PTSD assessment allowed for capturing anxiety (Simms et al., 2002; Sumner et al., 2019; Zoellner et al., 2014). Since the survey was planned to be administered at hospital, one of the principles of designing the questionnaire was to keep it as short as possible, so it would require the minimum effort from participants. For this reason, some measurements initially considered were not included in the survey in order to minimise research burden related to the duration of the study as well as any distress potentially associated with some questions.

## **7.8. Future research**

The findings of this research provide essential, thought tentative, information that underpins the phenomenon of post-fall trauma in older adults. Further research is recommended to explore and confirm these findings and provide robust, definite evidence that post-fall PTSD is a problem in

older adults and what other factors may influence it. Remaining gaps in knowledge of post-fall PTSD maintenance still need to be addressed. However, this research highlighted the importance of the problem of post-fall trauma and its impact on older people.

As described in the previous sections, there are measurement concerns that should be addressed in future studies, particularly the assessment of FoF and anxiety. One of the strengths of the present study is the fact that it acknowledged the problem with the definition of FoF and it clearly differentiated FoF from FE and anxiety. Moreover, it proposed a new understanding of FoF. That is, FoF might be an innate and protective fear. Further research is required to assess the magnitude of FoF, especially in the context of anxiety and falls-efficacy, in order to explore the relationships between the constructs. This study calls for a new definition of FoF, as well as new assessment tools which would clearly differentiate it from other concepts. Future studies should include a separate tool to assess anxiety, which is what this research lacked. Moreover, the present study did not quantitatively assess participants' previous traumatic experiences. The results of the qualitative study revealed that such occurrences may have detrimental effects on older adults. Replication of the current study on more diverse samples is recommended. In particular, patients with less severe injuries which do not require hospitalisation should be included in future studies. Larger samples are required to unravel causal relationships between previous trauma exposure and post-fall PTSD, and other factors such as anxiety, FoF and FE.

The present quantitative study resulted in the development of a model of multidimensional FE which incorporated PTSD clusters- dysphoria and fear. This model needs to be further investigated and confirmed, which can be used as a basis for the development of a larger model, which would incorporate other factors such as pain, which was not quantitatively assessed in this study, but was found to play an important role in older adults' recovery. In particular, fear can trigger the experience of pain, but also pain can trigger fear. Thus, incorporating such relationship could potentially benefit the model.

The current study demonstrated that the SOC model may be an ideal model to guide fall-related recovery, through its focus on maximising gains and minimising losses. Training individuals in goal-setting and applying SOC strategies to their recovery may be an avenue for future research. If older adults are presented with successful coping models, such as SOC, they can become encouraged to maximise their functioning when faced with fall-related recovery. Future studies should focus on long-term effects of the use of SOC strategies and its influence on psychological wellbeing among fallers. Larger samples are required to investigate relationships between SOC competency and other constructs, such as PTSD, FE and FoF.

The qualitative study emphasised the role of resources in the recovery and the use of SOC strategies. Further work is required to discover key resources required for fall recovery. That is, by reducing the scope of the study to explore the impact of the loss and gain of resources on post-fall recovery over time would allow for consideration of most influential resources on older adults' psychological wellbeing and physical functioning. The present qualitative study revealed the importance of e.g. social support and finances, yet, other resources need to be explored, especially within the context of other populations. For instance, urban citizens have a better access to transport and healthcare than people living in rural areas. However, they may lack other resources which were overlooked in the present study due to the sample characteristics.

## **7.9. Implications**

There are implications from this study for the provision of healthcare services. Since post-fall PTSD is not uncommon, there is a need for an early assessment of fall patients. Falls frequently occur among older adults and PTSD is the fifth most common psychiatric disorder (Kessler et al., 2005), which potentially makes falls one of the most common reasons for PTSD development among older people. There is a dramatic variability in symptoms among traumatised individuals (Galatzer-Levy & Bryant, 2013). The frequency, intensity and duration of PTSD may vary widely. Many people may experience no or few symptoms while some may experience severe and persistent symptoms (Bonanno et al., 2011). One of the problems of late-life trauma is related to PTSD diagnosis. Older adults are often misdiagnosed and their PTSD symptoms are either attributed to their physical state, or depression (Averill & Beck, 2000). Even if PTSD symptoms are reported, they may be perceived as part of abnormal ageing process rather than PTSD (Van Zelst et al., 2003). The results highlight the importance of taking a comprehensive trauma history to avoid a misdiagnosis of PTSD. Prior exposure to trauma may increase the susceptibility to the effects of subsequent stressful events (Solomon & Ginzburg, 1998). Low grade stressors, which should have no effect, have been found to trigger PTSD in older individuals with previous trauma history (Boe et al., 2010). Greater lifetime exposure to trauma is a stronger predictor of PTSD among older adults than the severity of a single event (Ogle et al., 2013). Suchorab (2019) reported that cumulative exposure to traumatic events contributed 7% of unique variance to the severity of PTSD, suggesting that the cumulative burden of lifetime exposure to trauma may be more predictive of PTSD than the severity of one traumatic event. Thus, screening tools, which would incorporate older patients' life story, as well as factors related to PTSD development nominated by this study, need to be developed and implemented in healthcare settings.

Adoption of early management approaches is essential. The results of this study show that PTSD may have severe consequences, which is line with previous research. For instance, Sommer et al.

(2019) demonstrated that regardless of age, PTSD is associated with poorer physical health. Since post-fall PTSD is not uncommon, interventions need to be developed which would target individuals who at risk of developing PTSD. Such interventions should be aimed at limiting the impact of PTSD on older adults' recovery and lives. Since pain was found to have much impact on recovering patients, potentially, such intervention should also be aimed at decreasing pain. Furthermore, they should also consider previous traumatic events, especially the ones experienced early in life when individuals were unable to process the event, and may become aware of it in late life. Old age, painful injuries, immobility and distress caused by falls, might trigger such memories, which could potentially compromise older people's recovery.

Policy makers should acknowledge that some older adults require more attention from health professionals. Healthcare providers often fail to, or are unable to, due to e.g. workload, reflect the complexity of the patients' situation, and tend to focus on basic medical needs rather than on the patient's needs (LeClerc et al., 2002). Patients and healthcare providers often disagree on what the patient may need after returning home (Frankum et al., 1995). Furthermore, patients may not foresee their needs at home while they are still in hospital (Weaver et al., 1998). The present research highlights the importance of a patient-centred approach as a way forward, where empowerment is fundamental. The empowerment approach involves facilitating and supporting patients to reflect on their own experiences (Anderson & Funnell, 2010). That is, it is about assisting fallers to get what they feel they need in order for them to make autonomous, informed decisions about their recovery. It leads to enhanced awareness and understanding of the consequences of the decision an older adult makes. Healthcare professionals should facilitate the process and negotiate choices for recovery in recognition that people prefer to drive the decision-making process (McInnes et al., 2011). On the other hand, health professionals should not be overwhelmed with the amount of demands which would affect the quality of care they provide. One of the possible solutions for that could be active participation of family, which could reduce the potential demands on the healthcare delivery system.

Fear of falling and low falls-efficacy are significant and understandable concerns among fall patients. A lack of understanding of falls attribution suggests that older adults require some fall-related education. It is important to help older adults develop "healthy risk awareness" (Hjalmarson et al., 2007). It appears that older adults are in need of information about falls and falls prevention. Efforts should be made to ensure that medical professionals provide necessary information and guidance to older adults. Tiefenbachová & Zeleníková (2019) demonstrated that assessment of home hazards followed by individual education and home environment modification can significantly reduce the risk of falling at home.

The qualitative data highlighted the importance of pain management. Pain is common in the older population, with up to 76% of seniors experiencing it (Abdulla et al., 2013). Pain is associated with impaired physical function and it is a well-established risk factor for falls (Leveille et al., 2009). Furthermore, the risk increases with the severity of pain (Stubbs et al., 2014). Poor postoperative pain management can delay rehabilitation (Tulay, 2015), and it is a major predictor of mental status decline among older adults (Duggleby & Lander, 1994). Uncontrolled pain may result in the development of PTSD, with pain serving as a reminder of the experience. Health professionals are well aware of the problem of postoperative pain, yet they are cautious with pharmaceutical approach to pain management since they fear of addiction (McCaffrey et al., 2005). Furthermore, certain pharmaceuticals may have severe side effects on the elderly (Tamez-Peña et al., 2014). This highlights the need for better pain management and monitoring during the acute phase and after hospital discharge. Non-pharmaceutical approaches to pain management might be crucial in older adults' fall recovery. Active pain management strategies that support self-management should be encouraged by healthcare professionals.

Support for individuals with compromised resources should be made available as soon and as early as possible. It clearly emerged from the study that resources have much impact on older people's recovery and life. Since falls are most often experienced by older people who might have experienced losses and growing disabilities, the injury may add to the risk of losing more resources (Zidén et al., 2008). It is possible that resource-poor individuals are in need of education and more services to assist them in modifying and adapting meaningful activities to promote their physical and mental health.

As shown by the findings of the current study, social support is crucial in older adults' recovery. Concentrated efforts are required by relevant stakeholders towards addressing loneliness amongst older adults who lack social support. Investment in meaningful social interactions can enhance satisfaction of emotional needs and lead to optimisation of social networks (English & Carstensen, 2014). A sense of closeness to a specific group might be beneficial in mitigating PTSD risk and promoting wellbeing (Suchorab, 2019). Blackburn & Owens (2015) found that social support helped traumatised individuals to orient their life towards the future and promoted healing. Social support has been found to significantly correlate with FoF (Gagnon et al., 2005). Older adults who could not rely on the support provided by their partner, were more likely to be afraid of falling compared to individuals who received such support when needed (Filiatrault et al., 2009). Potentially, people who can rely on their family may feel less vulnerable towards the consequences of falling because there would someone who would provide physical assistance in case of loss of independence.

For some participants, assistive devices created much resistance due to their negative association with ageing. This is consistent with Rush et al. (2011), who found that older adults were reluctant to use assistive devices. Thus, adaptive behaviours such as using assistive devices and receiving help from others, should be discussed with older adults based on their needs and resources available to them (Yuen & Vogtle, 2016). Such approach could promote rehabilitation (Ziegelmann & Lippke, 2014), and prevent functional declines (Hutchinson & Nimrod, 2012). Exploring older adults' needs can inform healthcare providers about personal goals and needs of fallers, which ultimately can increase patients' motivation.

### **7.10. Conclusions**

This research successfully achieved its original aims and provided supportive evidence that post-fall trauma is an important issue in some older adults. A review of the literature highlighted a gap in the current knowledge around post-fall PTSD development and the impact of trauma on older people's recovery and life. There was much inconsistency across the findings, yet, the studies suggested that some older adults may in fact develop PTSD as a result of falling. Falls and PTSD are both complex issues which can have serious long-term effects. The application of the Life Thread Model (Ellis-Hill et al. 2008), which is a novel approach to the area of falls, allowed for the exploration of the impact of falls on older people's recovery and lives. Furthermore, the SOC model (Baltes, 1997) was used as an analytic lens, which allowed for the investigation of strategies that older adults apply in order to cope with their fall-related losses. Even though the model was previously applied by Laybourne et al. (2008), the authors failed to grasp the essence of the model by categorising people according to the strategies they applied. The present study adapted a holistic view on the model, which is a novel approach to the issue of falls.

The present study found that post-fall PTSD is not uncommon among older adults. Old age, gender, multiple chronic conditions, injury severity, the length of time spent on the ground waiting for help and falls history were found to be related to PTSD severity. Fear of falls and decreased falls-efficacy were prevalent among older adults. A model of multidimensional falls-efficacy was proposed to explain how PTSD symptoms operate with fall-related factors, such as FoF and falls attribution (repeatability). Older adults' lives were affected by their falls. For some individuals there was no sense of return to their previously lived lives. It affected their approach to the recovery. These findings are paramount in providing a new research contribution to support and inform future research and health specialists and practitioners. More appropriate interventions need to be developed which would address fall-related trauma in older adults. This ultimately can benefit all concerned in helping to improve older adults' long-term outcomes.

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## Appendices

### Appendix 1: Diagnostic criteria of DSM-IV and DSM-5

DSM-IV	DSM-5
A1 The person experienced, witnessed, or was confronted with an event that involved actual or threatened death or serious injury or a threat to the physical integrity of self or others.	A Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways: 1. Direct experience 2. Witnessing trauma 3. Learning that the traumatic event occurred to someone close 4. Experiencing repeated or extreme exposure to aversive details of the traumatic event.
A2 The person's response involved intense fear, helplessness, or horror.	
B1 Recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions.	B1 Recurrent, involuntary, and intrusive distressing memories of the traumatic event.
B2 Recurrent distressing dreams of the event.	B2 Recurrent distressing trauma-related dreams.
B3 Acting or feeling as though the event were recurring.	B3 Dissociative reactions in which the individual feels or acts as if the traumatic event were recurring.
B4 Intense psychological distress at exposure to internal or external cues that symbolise or resemble an aspect of the traumatic event.	B4 Intense or prolonged psychological distress at exposure to internal or external cues that symbolise or resemble an aspect of the traumatic event.
B5 Physiologic reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event	B5 Marked physiological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event.
C1 Efforts to avoid thoughts, feelings, or conversations associated with the trauma.	C1 Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event.
C2 Efforts to avoid activities, places, or people that arouse recollections of the trauma.	C2 Avoidance of or efforts to avoid external reminders that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event.
C3 Inability to recall an important aspect of the trauma.	D1 Inability to remember an important aspect of the traumatic event.



<b>DSM-IV</b>		<b>DSM-5</b>	
C4	Markedly diminished interest or participation in significant activities.	D5	Markedly diminished interest or participation in significant activities.
C5	Feeling of detachment or estrangement from others	D6	Feeling of detachment or estrangement from others
C6	Restricted range of affect (e.g., unable to have loving feelings).	D7	Persistent inability to experience positive emotions (e.g., inability to experience happiness, satisfaction, or loving feelings).
C7	Sense of foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span).	D2	Persistent and exaggerated negative beliefs or expectations about oneself, others, or the world.
		D3	Persistent distorted cognitions about the cause or consequence of the traumatic event that lead the individual to blame himself/herself or others
		D4	Persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame)
D1	Difficulty falling or staying asleep.	E6	Sleep disturbance (e.g., difficulty falling or staying asleep or restless sleep).
D2	Irritability or outbursts of anger.	E1	Irritable behaviour and angry outbursts (with little or no provocation) typically expressed as verbal or physical aggression toward people or objects.
D3	Difficulty concentrating.	E5	Problems with concentration
		E2	Reckless or self-destructive behaviour.
D4	Hypervigilance	E3	Hypervigilance
D5	Exaggerated startle response.	E4	Exaggerated startle response.
E	Duration of the disturbance is at least one month: Acute—when the duration of symptoms is less than three months. Chronic—when symptoms last three months or more.	F	Duration of the disturbance is more than 1 month.  “Acute” and “chronic” eliminated.
F	Requires significant distress or functional impairment.	G	The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
		H	The disturbance is not attributable to the physiological effects of a substance (e.g., medication, alcohol) or another medical condition

## Appendix 2: Research Ethics Checklist.



# Research Ethics Checklist

Reference Id	8561
Status	Approved
Date Approved	02/09/2015

### Researcher Details

Name	Natalia Adamczewska
Faculty	Faculty of Science & Technology
Status	Postgraduate Research (MRes, MPhil, PhD, DProf, DEng)
Course	Postgraduate Research - FST
Have you received external funding to support this research project?	No

### Project Details

Title	Recovery after an accidental fall
Proposed Start Date of Data Collection	22/07/2015
Proposed End Date of Project	31/08/2016
Original Supervisor	Samuel Nyman
Approver	Research Ethics Panel

Summary - no more than 500 words (including detail on background methodology, sample, outcomes, etc.)

The central aim of the study is to investigate psychological adjustment to accidental falls. Specifically, the following questions will be addressed: what are the psychological outcomes for older people who have fallen and what are the aspects related to successful post fall adjustment and what aspects preclude it. Participants: The questionnaire study requires 113 participants (power analysis has been performed using G\*Power 3.1 in order to perform MANOVA and multiple regression analysis). Participants will be patients of orthopaedic wards and an outpatient clinic at hospitals in Poland. People aged 60+ who have experienced a fall that required medical help will be selected for the study. People, who appear vulnerable, cognitively impaired or people who do not understand the study requirements will not be interviewed. The number of the participants required for the qualitative stage of the study will depend on the saturation. Based on the previous narrative research in the area of falls, the number of participants could be estimated between 10-18 participants. Design: First, participants will be given a participant information sheet. Next, participants will complete a questionnaire which will take around 20-30 minutes. The questions will regard participants' falls, fear of falls, PTSD, selection, optimization and compensation strategies and the self-concept in the past, present and future. The study will take place in the hospital settings. The questionnaire is a self-completion questionnaire. Participants do not need to sign any form and give any personal information at this point of the study. It means that by completing the questionnaire, they consent to take part in the study. Next, participants will be given a consent form which will ask them if they agree to be contacted in the future by the researcher. If they agree, they will be asked to provide their name and their phone number. If they do not agree, they will not need to provide any information. On the basis of the questionnaire study (presence or absence of PTSD symptoms), participants will be selected for semi-structured interviews which will be audio recorded. Each participant will be interviewed at two occasions. Before each interview, participants will be given a participant information sheet and a consent form. First interview will take place 2-3 weeks after completing the questionnaire and questions will regard participants' life story, falling, plans for recovery. The second interview will take place approximately 6 months after the first interview and questions will regard participants' recovery. Participants will be given £8 for their time after the second interview. All the audio records will be transcribed and will be a subject to narrative analysis, the analysis will involve the analysis of the form and the content. A personal ID number will be used instead of names. The consent forms will be stored securely in a locked cabinet. The audio records and transcriptions will be stored in a password protected laptop computer. If participants agreed to be contacted by the researcher, yet they are not eligible for the study, their contact information will be destroyed within a month after the questionnaire study. If they are eligible, their contact information will be kept until the end of the data analysis (i.e. one year after filling out the questionnaire). All the data collected will be destroyed by December 2016 (i.e. at the end of the PhD process).

## External Ethics Review

Does your research require external review through the NHS National Research Ethics Service (NRES) or through another external Ethics Committee?	No
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## Research Literature

Is your research solely literature based?	No
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## Human Participants

Will your research project involve interaction with human participants as primary sources of data (e.g. interview, observation, original survey)?	Yes
Does your research specifically involve participants who are considered vulnerable (i.e. children, those with cognitive impairment, those in unequal relationships—such as your own students, prison inmates,	No

etc.)?	
Does the study involve participants age 16 or over who are unable to give informed consent (i.e. people with learning disabilities)? NOTE: All research that falls under the auspices of the Mental Capacity Act 2005 must be reviewed by NHS NRES.	No
Will the study require the co-operation of a gatekeeper for initial access to the groups or individuals to be recruited? (i.e. students at school, members of self-help group, residents of Nursing home?)	Yes
Will it be necessary for participants to take part in your study without their knowledge and consent at the time (i.e. covert observation of people in non-public places)?	No
Will the study involve discussion of sensitive topics (i.e. sexual activity, drug use, criminal activity)?	No
Are drugs, placebos or other substances (i.e. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind?	No
Will tissue samples (including blood) be obtained from participants? Note: If the answer to this question is 'yes' you will need to be aware of obligations under the Human Tissue Act 2004.	No
Could your research induce psychological stress or anxiety, cause harm or have negative consequences for the participant or researcher (beyond the risks encountered in normal life)?	No
Will your research involve prolonged or repetitive testing?	No
Will the research involve the collection of audio materials?	Yes
Is this audio collection solely for the purposes of transcribing/summarising and will not be used in any outputs (publication, dissemination, etc.) and will not be made publicly available?	No
Will your research involve the collection of photographic or video materials?	No
Will financial or other inducements (other than reasonable expenses and compensation for time) be offered to participants?	Yes
Please explain below why your research project involves the above mentioned criteria (be sure to explain why the sensitive criterion is essential to your project's success). Give a summary of the ethical issues and any action that will be taken to address these. Explain how you will obtain informed consent (and from whom) and how you will inform the participant(s) about the research project (i.e. participant information sheet). A sample consent form and participant information sheet can be found on the Research Ethics website.	

The study is mixed methods in nature which potentially may enrich the data. The first stage involves a questionnaire study which will allow for a sample selection for the qualitative study. Based on the questionnaire responses, participants will be chosen for the qualitative interviews. It is believed that people with no PTSD symptoms and people with PTSD symptoms will provide rich data. Each participant will be interviewed twice. It will allow for investigating the process of adjustment, rather than focusing on the end point of the adjustment. Interviews will be audiorecorded and participants will be informed about it. The study will be conducted at hospitals and head nurses will act as gatekeepers. That is, they will be responsible for selecting patients who will be suitable for the study (i.e. over 60, with a fracture due to accidental falling, lack of cognitive impairments). Participants will be fully informed about the study and will receive 'Participant Information sheet' with all the information about the study. In the consent form regarding future contact participants will be asked to provide their phone number in case they want to be contacted by the researcher in order to arrange the next study. If they are not willing to participate in any other study, they do not need to provide any contact information. Some quotes from the interviews will be cited in the PhD thesis, conference presentations and in peer-reviewed articles reporting the study. Since this is a study which involves repetitive interviewing, participants are offered £8 for their time at the end of the second interview in order to encourage them to participate.

## Final Review

<b>Will you have access to personal data that allows you to identify individuals OR access to confidential corporate or company data (that is not covered by confidentiality terms within an agreement or by a separate confidentiality agreement)?</b>	Yes
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<b>Please explain below why your research requires the collection of personal data. Describe how you will anonymize the personal data (if applicable). Describe how you will collect, manage and store the personal data (taking into consideration the Data Protection Act and the 8 Data Protection Principles). Explain how you will obtain informed consent (and from whom) and how you will inform the participant about the research project (i.e. participant information sheet).</b>
The collection of personal data (name and phone number) is necessary in order to conduct the next stage of the study. The questionnaire study will allow for choosing the sample for the semi-structured interviews and for this reason contact information is required. Participants will be given the consent form regarding future contact and they can provide their personal information if they are willing to participate in the qualitative part of the study. If they do not wish to be contacted in the future, they do not need to provide any personal information. Participants will be ensured that their participation will be confidential and they will be informed how personal information will be stored (participant information sheet). Participants will be given ID numbers so they will not be readily identifiable. The information will be stored securely and protected from intrusion. All the forms signed by participants will be stored in a locked storage. The data will be accessible only to the researcher.

<b>Will your research involve experimentation on any of the following: animals, animal tissue, genetically modified organisms?</b>	No
<b>Will your research take place outside the UK (including any and all stages of research: collection, storage, analysis, etc.)?</b>	Yes
<b>Does the country in which you are conducting research require that you obtain internal ethical approval (i.e. beyond that required by Bournemouth University)?</b>	No

### Appendix 3: Study approval by Komisja Bioetyczna (Eng. Bioethical Board).

Poznań dnia 20 listopada 2013 r.

Komisja Bioetyczna  
przy Okręgowej Radzie Lekarskiej  
Wielkopolskiej Izby Lekarskiej  
61-734 Poznań, ul. Nowowiejskiego 53  
tel. (061) 851-81-60, fax (061) 851-87-62

**Szanowna Pani**  
**Natalia Adamczewska**  
**Wyrów 17/2**  
**62-820 Stawiszyn**

**Szanowna Pani,**

Komisja Bioetyczna przy Okręgowej Radzie Lekarskiej Wielkopolskiej Izby Lekarskiej informuje, że przyjęła do wiadomości informację z dnia 21 października 2013 r. o planowanych badaniach ankietowych na pacjentach Oddziału Urazowo-Ortopedycznego w Wojewódzkim Szpitalu Zespolonym im. Ludwika Perzyny w Kaliszu.

Z poważaniem

Przewodnicząca  
Komisji Bioetycznej  
przy Okręgowej Radzie Lekarskiej  
Wielkopolskiej Izby Lekarskiej  
*de Mezer-Dambek*  
dr n. med. Maria de Mezer-Dambek

## Appendix 4: Study approval from Regional Hospital im. Ludwika Perzyny in Kalisz.

Natalia Adamczewska  
Wyrów 17/2  
62-820 Stawiszyn  
Tel. 501408287  
E-mail: [nadamczewska@bournemouth.ac.uk](mailto:nadamczewska@bournemouth.ac.uk)

Wyrów, 22.09.2015



**Wojewódzki Szpital Zespolony  
Im. Ludwika Perzyny w Kaliszu  
Ul. Poznańska 79  
62-800 Kalisz**


*Podanie o przedłużenie pozwolenia na przeprowadzenie badań na pacjentach Oddziału  
Urazowo-Ortopedycznego w Wojewódzkim Szpitalu Zespolonym w Kaliszu*

Zwracam się z prośbą o przedłużenie pozwolenia na przeprowadzenie badań ankietowych na pacjentach Oddziału Urazowo-Ortopedycznego (NO/075/643/13). Zgodę na badania do 1.01.2013 otrzymałam 18.10.2013 i chciałabym ją przedłużyć do 1.02.2016.

Uprzejmie proszę o przychylne rozpatrzenie mojego podania.

*Z wyrazami szacunku;*

Natalia Adamczewska



## Appendix 5: Study approval from the Team of Health Care in Ostrów Wielkopolski.

Natalia Adamczewska

Wyrów 17/2

62-820 Stawiszyn

Tel. 501408287

E-mail: nadamczewska@bournemouth.ac.uk



Wyrów, 24.09.2013

02.10.2013

Zgoda w sprawie i  
na rozszerzenie składu  
z DYREKTOR H. Fala

*[Signature]*  
Dariusz Białko

02.10.2013

*[Signature]*  
Dyrektor  
Dariusz Białko

Zespół Zakładów Opieki Zdrowotnej  
Ul. Limanowskiego 20/22  
63-40 Ostrów Wielkopolski

Podanie o pozwolenie na przeprowadzenie badań na pacjentach Oddziału Ortopedycznego w  
Zespole Zakładów Opieki Zdrowotnej w Ostrowie

09.10.2013

*[Signature]*  
N.I. zwiastująca prezydent

Dyrektor Oddziału Chirurgii  
i Traumatologii i Patologii Ręki

dr n. med. Mirosław Fala  
Specjalista chorób i urazów ogólnych

Jestem doktorantką pierwszego roku na Uniwersytecie w Bournemouth i tytuł mojej pracy doktorskiej to: „Psychological adjustment to accidental falls: An analysis that will lead to healthy ageing” (Pl.: Psychologiczna adaptacja do upadków: analiza która doprowadzi do zdrowego starzenia się). Celem mojej pracy doktorskiej jest zbadanie czynników, które wpływają na to, jak osoby w podeszłym wieku radzą sobie z rekonwalescencją po upadku, w wyniku którego doznały złamania i uwzględnieniu tych czynników przy stworzeniu nowego modelu psychologicznej adaptacji osób starszych do upadków. Moja praca uwzględnia badanie czynników społeczno-kulturowych i porównanie Polskiej populacji do populacji Angielskiej.

W związku z powyższym, zwracam się z prośbą o udzielenie mi pozwolenia na badanie ankietowe na pacjentach Oddziału Ortopedycznego od 1.10.2013 do 31.11.2013. Badanie odbywałoby się raz w tygodniu. Badanie polega na wypełnieniu ankiety przez pacjentów w wieku od 65 lat. Pytania dotyczą upadku, charakterystyki osobowości pacjenta oraz sytuacji emocjonalnej przed i po upadku.

Celem tego badania jest wyłonienie pacjentów do dalszego badania jakościowego. Badanie jakościowe odbędzie się po wypisaniu pacjentów ze szpitala i przeprowadzone zostanie wyłącznie na pacjentach, którzy zgodzą się na nie podczas badania ankietowego; oraz spełnią określone kryteria (wiek od 65 lat, złamanie w wyniku upadku oraz zupełny brak lub wyraźna obecność



symptomów stresu pourazowego). Badanie jakościowe polega na przeprowadzeniu wywiadów z ok. 12-18 pacjentami. Z każdym z tych pacjentów wywiad będzie przeprowadzony dwukrotnie: pierwszy wywiad przeprowadzony będzie w przeciągu miesiąca od upadku, a drugi wywiad będzie miał miejsce w przeciągu pół roku od poprzedniego wywiadu.

Otrzymałam pozwolenie na przeprowadzenie tego badania od Uniwersytetu w Bournemouth w dniu 16.09.2014. Badanie zostało zaakceptowane jako etyczne.

Uprzejmie proszę o zgodę na badania.

*Z wyrazami szacunku;*

Natalia Adamczewska

## Appendix 6: Study approval from the Medical Center in Pleszew.



Pleszew, 01.10.2015r.

PCM 4656/2015

Natalia Adamczewska  
Wyrów 17/2  
62-820 Stawiszyn

Pleszewskie Centrum Medyczne Sp. z o.o. informuje, iż wyrażamy zgodę na przeprowadzenie badań na pacjentach Oddziału Ortopedycznego i Poradni Ortopedycznej (3.182/2013).

Jednocześnie zalecamy przedstawienie wyników badań do wglądu PCM.

Z poważaniem

## **Appendix 7a: Quantitative study: Participant Information Sheet - English.**

### **PARTICIPANT INFORMATION SHEET**

#### **Full title of project: Psychological recovery after accidental falls**

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

#### **What is the purpose of the project?**

The aim of the study is to learn about psychological adjustment to falls, the healthcare provided to you and the treatment you have received after your fall.

#### **Why have I been chosen?**

You are over 60 years old and have experienced an injury due to a fall.

#### **Do I have to take part?**

Your participation is voluntary and you may withdraw your participation at any point of the study without giving any reason.

#### **What do I have to do?**

You will be asked to fill out a questionnaire about your fall. It will take around 20–30 minutes. By completing the questionnaire you consent to take part in the study and agree for the information you share in the questionnaire to be used for the research. At the end of the study you will be given a form which will ask you whether you agree to be contacted by the researcher in the future. If you agree, you will need to provide your name and your phone number. If you do not agree, you do not have to fill in the form. If you agree to be contacted by the researcher and are eligible for the next stage of the study then you will be invited to take part in two interviews. The first interview will be within 2–3 weeks. The second interview will take place 6 months after the first interview. The interviews will be to learn more about your life (you will decide what you want to talk about), the fall and your recovery.

#### **What are the possible disadvantages and risks of taking part?**

Thinking about your fall may be upsetting for you therefore you are free to withdraw your participation if you do not wish to continue. If the interview upsets you and you feel you need additional help, you will be advised to contact your GP, counsellor or another key worker.

#### **What are the possible benefits of taking part?**

Some may find it helpful to fill in the questionnaire and find it rewarding to help with research. Otherwise, there will be no clear benefit to you from your participation in this research. If you take part in the next stage of the study, which will involve two interviews at two different occasions, you will be paid £8. This research is for Bournemouth University and it is no way connected to your hospital care. Therefore, your decision to take or not will not be made known to staff and will not influence the care you receive.

**Will my taking part in this project be kept confidential?/ What will happen to the results of the research project?**

If you decide to fill out the questionnaire only, no personal information will be obtained and therefore your participation will be anonymous. If you provide your contact information, yet you are not eligible for the next stage of the study, your contact information will be destroyed (within a month after the questionnaire completion). That means all the data collected from you from that moment will be anonymous. If you are eligible for the next study, your contact information will be kept until the end of the data analysis (i.e. one year after filling out the questionnaire) and you have the right to withdraw at any point during this time without giving any reason. After the data becomes anonymous you will not be able to withdraw your participation. The anonymous questionnaire responses will be stored securely for 5 years and only the researcher and her supervisors (Dr Samuel Nyman, Prof. Jonathan Parker and Prof. Peter Coleman) will have an access to it.

The next stage of the study will involve two interviews at two different occasions. Both interviews will be audio recorded and then transcribed onto computer. Participants will be given ID numbers so they will not be readily identifiable. The audio records and transcriptions will be stored securely and protected from intrusion. Only the researcher, Natalia Adamczewska, and her supervisors will have an access to the data. Your response will be treated with full confidentiality. You can request a copy of the interview transcript. The transcripts and the audio records will be stored securely for 5 years.

**What type of information will be sought from me and why is the collection of this information relevant for achieving the research project's objectives?**

You will be asked a set questions, multiple answers in majority, regarding your fall, your emotional reactions after falling, your attitude towards your recovery and your perception of yourself over time. The information gained from the research will be used to provide insights into the experience of falls which may lead into further studies into the area of falls.

**Contact for further information**

Name, position and contact details of researcher: Natalia Adamczewska, PhD candidate. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: nadamczewska@bournemouth.ac.uk. Tel. 668985754.

Name, position and contact details of supervisor: Dr Samuel R Nyman, Senior Lecturer.. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Tel: +44 01202 968179, Email: snyman@bournemouth.ac.uk.

In the event of a complaint contact: Matt Bentley, Deputy Dean – Research And Professional Practice. Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: mbentley@bournemouth.ac.uk.

## **Appendix 7b: Quantitative study: Participant Information Sheet - Polish.**

### **KARTA INFORMACYJNA UCZESTNIKA BADANIA**

#### **Temat projektu: Rekonwalescencja po upadkach**

Zanim zdecyduje się Pan/Pani na udział w badaniu, proszę uważnie zapoznać się z informacjami na temat celu i charakteru badania. Ewentualne pytania proszę kierować do badacza. Proszę nie spieszyć się z podjęciem decyzji.

#### **Jaki jest cel tego badania?**

Celem badania jest zdobycie wiedzy na temat tego, jak pacjenci dochodzą do siebie po upadkach; opieki, jaką otrzymują oraz rehabilitacji.

#### **Kto może wziąć udział w badaniu?**

Osoby w wieku powyżej 60 lat, które doświadczyły upadku

#### **Czy udział w badaniu jest obowiązkowy?**

Udział w badaniu jest dobrowolny, a uczestnik może wycofać się bez podania powodu w dowolnym momencie trwania badania.

#### **Jaki będzie przebieg badania?**

Badanie polega na wypełnieniu ankiety, które potrwa ok. 20–30 minut. Wypełnienie ankiety jest równoznaczne ze zgodą na wzięcie udziału w badaniu. Po zakończeniu badania, zostanie Panu/Pani przedstawiony 'Formularz zgody na dalszy kontakt'. Jeśli zechce Pan/Pani zgodzić się na to, aby badacz skontaktował się z Panem/Panią w celu dalszych badań, to proszę podać swój numer telefonu. Jeśli nie chce Pan/Pani wyraża takiej zgody, proszę nie wypełniać formularza.

Badacz przeanalizuje wyniki i ewentualnie skontaktuje się z uczestnikiem w przeciągu miesiąca, jeśli uczestnik spełni wymogi do następnego badania. W następnym etapie badania odbędą się dwa wywiady z uczestnikiem w dwóch różnych terminach. Wywiad składać się będzie z pytań dotyczących życia pacjenta (pacjent decyduje, o czym chce opowiadać), upadku, doświadczeń i konsekwencji z nim związanych. Wywiad standardowo trwa godzinę, jednakże jest to zależne od uczestnika i badanie może być dłuższe bądź krótsze. Wywiad będzie nagrywany dyktafonem. Sześć miesięcy po wywiadzie, odbędzie się następny wywiad o podobnym charakterze.

#### **Jakie są zagrożenia związane z badaniem?**

Nie ma żadnych przewidzianych zagrożeń. Jedyne dyskomfort związany z badaniem może ewentualnie dotyczyć samego opowiadania o upadku i możliwej traumie z nim związanej.

#### **Jakie są korzyści związane z badaniem?**

Nie ma bezpośrednich korzyści związanych z pierwszym badaniem (kwestionariusz). Często ludzie wypełniają kwestionariusze z dobrej woli. Jeśli uczestnik spełni wymagane kryteria i zgodzi się na kolejne badania, otrzyma 40zł na koniec wszystkich badań. To badanie jest przeprowadzane na potrzeby naukowe dla Uniwersytetu w Bournemouth i

nie jest w żaden sposób związane z opieką, jaką Pan/Pani otrzymuje. To, czy Pan/Pani zdecyduje się na uczestnictwo w badaniu nie zostanie ujawnione.

#### **Czy poufność jest gwarantowana?**

Jeśli zdecyduje się Pan/Pani wyłącznie na wypełnienie ankiety, nie musi Pan/Pani podać żadnych informacji kontaktowych, co oznacza, że uczestnictwo jest anonimowe. Jeśli zdecyduje się Pan/Pani na ewentualne dalsze uczestnictwo, to zostanie Pan/Pani poproszony/poproszona o podanie nazwiska i numeru telefonu. Nazwisko i numer telefonu będą tylko i wyłącznie do wglądu badacza; będą one przechowywane w bezpiecznym miejscu. Jeśli nie zostanie Pan/Pani zakwalifikowany/zakwalifikowana do następnego badania, to informacje kontaktowe zostaną zniszczone w przeciągu miesiąca od wypełnienia kwestionariusza i do tego momentu można wycofać swoje uczestnictwo bez podania przyczyny. Jeśli weźmie Pan/Pani udział w kolejnym badaniu, to dane kontaktowe będą zachowane przez rok, po czym zostaną zniszczone. Przez ten czas można wycofać swoje uczestnictwo bez podania przyczyny. Po tym, jak uczestnictwo staje się anonimowe, nie można go wycofać. Anonimowe kwestionariusze będą przechowywane przez 5 lat i wgląd do nich będą mieć tylko badacz oraz jej promotorzy: Dr Samuel Nyman, Prof. Jonathan Parker and Prof. Peter Coleman.

Następnie zostaną przeprowadzone dwa wywiady, które będą nagrywane dyktafonem i spisane na komputerze. Uczestnicy otrzymają numery, tak aby ich uczestnictwo nie mogło być w żaden sposób wyjawione. Nagrania i transkrypcje (bez nazwisk) będą przechowywane przez 5 lat i wgląd do nich będą mieć tylko badacz oraz jej promotorzy: Dr Samuel Nyman, Prof. Jonathan Parker and Prof. Peter Coleman. Uczestnik może poprosić o kopię nagrania i transkrypcji.

#### **Jakiego rodzaju pytania zostaną mi zadane?**

Pytania będą dotyczyły upadku, emocji z tym związanych, planów na rehabilitację oraz tego, jak Pan/Pani postrzega siebie na przestrzeni czasu. Pytania są w większości zamknięte. Informacje podane przyczynią się do lepszego zrozumienia tego, jak osoby po upadkach radzą sobie z rekonwalescencją.

#### **Kontakt w razie dalszych pytań**

Nazwisko, pozycja i kontakt do badacza: Natalia Adamczewska, doktorantka. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: [nadamczewska@bournemouth.ac.uk](mailto:nadamczewska@bournemouth.ac.uk). Tel: 668985754.

Nazwisko, pozycja i kontakt do promotora: Dr Samuel R Nyman, Starszy wykładowca. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Tel: +44 01202 968179, Email: [snyman@bournemouth.ac.uk](mailto:snyman@bournemouth.ac.uk).

W razie zażaleń: Matt Bentley, Zastępca dziekana. Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: [mbentley@bournemouth.ac.uk](mailto:mbentley@bournemouth.ac.uk).



## Appendix 8b: Consent Form – Polish

### FORMULARZ ZGODY NA DALSZY KONTAKT

Temat projektu: Rekonwalescencja po upadkach

Nazwisko, pozycja i dane kontaktowe badacza: Natalia Adamczewska, doktorantka. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: [nadamczewska@bournemouth.ac.uk](mailto:nadamczewska@bournemouth.ac.uk). Tel: 668985754.

Nazwisko, pozycja i dane kontaktowe promotora: Dr Samuel R Nyman, Starszy wykładowca. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Tel: +44 01202 968179, Email: [snyman@bournemouth.ac.uk](mailto:snyman@bournemouth.ac.uk).

W razie zażaleń: Matt Bentley, Zastępca dziekana. Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: [mbentley@bournemouth.ac.uk](mailto:mbentley@bournemouth.ac.uk).

Proszę zakreślić poniższe

Potwierdzam zapoznanie się z Kartą Uczestnika Badania oraz to, że miałem/miałam okazję zadać pytania dotyczące projektu.	
Rozumiem to, że moje dane będą poufne.	
Rozumiem to, że moje dane będą chronione i tylko badacz będzie miał do nich dostęp	
Zgadzam się na to, aby badacz skontaktował się ze mną w przyszłości.	

\_\_\_\_\_  
Nazwisko uczestnika

\_\_\_\_\_  
Data

\_\_\_\_\_  
Podpis

\_\_\_\_\_  
Numer telefonu uczestnika

\_\_\_\_\_  
Nazwisko badacza

\_\_\_\_\_  
Data

\_\_\_\_\_  
Podpis

Kiedy formularz zostanie podpisany przez badacza i uczestnika, uczestnik otrzyma kopię. Podpisane kopie formularza będą przechowywane w bezpiecznym miejscu.



## Appendix 9a: Questionnaire – English

### Recovery after an accidental fall

Name: .....

I would like to ask you questions about yourself, the fall you had and how you feel now.

#### Demographic information:

- Age: ..... years old
- Sex: (Please tick one)      Male       Female
- Do you consider yourself a religious person?       Yes       No
- What is your religion? .....
- Please list the long-term medical conditions you have been diagnosed with:  
.....

#### Fall information:

- How many falls have you had in the past 12 months? .....
- Roughly how long ago was your last fall? (please tick one response)

<input type="checkbox"/> < 1 week ago	<input type="checkbox"/> 1-2 weeks ago	<input type="checkbox"/> 2-4 weeks ago	<input type="checkbox"/> 1-2 months ago	<input type="checkbox"/> 2-6 months ago	<input type="checkbox"/> > 6 months ago
---------------------------------------	--	--	---	---	---

- Where did your last fall take place? (tick all that apply)  
 Home    Away from home    Inside a building    In the open air

- Did you need help to get up after fall? (Please tick one response)

- No, I got up by myself  
 Yes, I received help immediately  
 Yes, but I needed to wait a few minutes  
 Yes, but I needed to wait up to one hour  
 Yes, but I needed to wait for several hours

- Please indicate what type(s) of injury (injuries) you suffered due to your last fall, please state the specific location(s) of the injury (injuries).

<b>Type of injury</b>	<input type="checkbox"/> No injury	<input type="checkbox"/> Cut /Laceration	<input type="checkbox"/> Bruise / Hematoma	<input type="checkbox"/> Sprain /Strain	<input type="checkbox"/> Fracture	<input type="checkbox"/> Other
<b>Location</b>						

- What did you think was the major cause of the fall?  
.....

- Which of the following is closest to the main reason you had a fall?

- I am old  
 My health is not good  
 I am a kind of person that things like that always happen to (e.g. clumsy, careless)  
 Because of the environment or weather  
 Because I did or did not do something  
 Because other people did or did not do something  
 Bad luck

- Looking back, do you think you could have prevented yourself from falling?

Definitely <b>not</b> have prevented the fall	1	2	3	4	5	6	7	Definitely have prevented the fall
---	---	---	---	---	---	---	---	------------------------------------

- How likely is that the reason you fell last time will cause you to fall again in the next 6 months?

Highly unlikely	1	2	3	4	5	6	7	Highly likely
-----------------	---	---	---	---	---	---	---	---------------

- Are you afraid of falling? (Please tick one response)

- Yes       No

In this section you will be asked questions about how concerned you are about the possibility of falling. Please reply thinking about how you usually do the activity. If you currently do not perform some activities, please answer to show whether you think you would be concerned about falling if you were to perform the activity. Please tick the answers which are closest to your opinion to show how concerned you are that you may fall while performing the activities.

	Not at all concerned	Somewhat concerned	Fairly concerned	Very concerned
Getting dressed or undressed				
Taking a bath or shower				
Getting in or out of a chair				
Going up or down stairs				
Reaching for something above your head or on the ground				
Walking up or down a slope				
Going out to a social event (e.g. religious service, family gathering or club meeting)				

The next section presents a list of problems and complaints that people may have in response to their fall. Read each one carefully, put an "X" in the box to indicate how much you have been bothered by that problem in the past month. Reach problem with respect to your last fall.

Scale: 1 = not at all like me, 5 = very much like me

Repeated, disturbing <i>memories, thoughts, or images</i> of your last fall?	1	2	3	4	5
Repeated, disturbing <i>dreams</i> of your fall?	1	2	3	4	5
Suddenly acting or feeling as if the fall were happening again (as if you were reliving it)?	1	2	3	4	5
Feeling very upset when something reminded you of your last fall?	1	2	3	4	5
Having physical reactions (e.g. heart pounding, trouble breathing, sweating) when something reminded you of your fall?	1	2	3	4	5
Avoid thinking about or talking about your fall or avoid having feelings related to it?	1	2	3	4	5
Avoid activities or situations because they remind you of your last fall?	1	2	3	4	5
Trouble remembering important parts of your fall?	1	2	3	4	5
Loss of interest in things that you used to enjoy before your fall?	1	2	3	4	5
Feeling distant or cut off from other people?	1	2	3	4	5
Feeling emotionally numb or being unable to have loving feelings for those close to you since the fall?	1	2	3	4	5
Feeling as if your future will somehow be cut short?	1	2	3	4	5
Trouble getting or staying asleep since your fall?	1	2	3	4	5
Feeling irritable or having angry outbursts?	1	2	3	4	5
Having difficulty concentrating since your last fall?	1	2	3	4	5
Being "super alert" or watchful on guard?	1	2	3	4	5
Feeling jumpy or easily startled?	1	2	3	4	5

Next is a list of characteristics of two different people and how they approach their fall recovery. For each characteristic choose which person is most similar to you. Tick only one response for each characteristic.

Person A	Person B
<input type="checkbox"/> In my fall recovery, I concentrate all my energy on a few things.	<input type="checkbox"/> In my fall recovery, I divide my energy among many things.
<input type="checkbox"/> When it comes to my fall recovery, I focus on the one most important goal at a given time.	<input type="checkbox"/> When it comes to my fall recovery, I am always working on several goals at once.
<input type="checkbox"/> When I think about what I want to achieve in my fall recovery, I commit myself to one or two important goals.	<input type="checkbox"/> Even when I really consider what I want to achieve in my fall recovery, I wait and see what happens instead of committing myself to just one or two goals.
<input type="checkbox"/> When things don't go well in my fall recovery, I choose one or two important goals.	<input type="checkbox"/> When things don't go well in my fall recovery, I still try to keep all my goals.
<input type="checkbox"/> When I can't do something which is important for my recovery, I look for a new goal.	<input type="checkbox"/> When I can't do something which is important for my recovery, I distribute my time and energy among many other things.
<input type="checkbox"/> In terms of my recovery, when I can't do something as well as I used to, I think about what exactly is important to me.	<input type="checkbox"/> In terms of my recovery, when I can't do something as well as I used to, I wait and see what comes.
<input type="checkbox"/> I keep working on what I have planned to achieve in my fall recovery until I succeed.	<input type="checkbox"/> When I don't succeed right away at what I want to achieve in my recovery, I don't try other possibilities.
<input type="checkbox"/> I make every effort to achieve a given goal of my fall recovery.	<input type="checkbox"/> In my fall recovery, I prefer to wait for a while and see if things will work out by themselves.
<input type="checkbox"/> I devote myself fully and completely to my fall recovery because it matters to me.	<input type="checkbox"/> I have a hard time devoting myself fully and completely to my recovery, even if it matters to me.
<input type="checkbox"/> If I can't achieve a goal of my recovery, I keep trying other ways until I achieve the desired result.	<input type="checkbox"/> If I can't achieve a goal of my recovery, I just give up.
<input type="checkbox"/> When something in my recovery is not going as I have hoped; I ask others for advice or help.	<input type="checkbox"/> When something in my recovery isn't going as I have hoped; I decide what to do about it myself, without involving other people.
<input type="checkbox"/> In terms of my recovery, when it becomes harder for me to get the result I want, I keep trying harder until I can do it as I have planned.	<input type="checkbox"/> In terms of my recovery, when it becomes harder for me to get the result I want, it is time to let go of that expectation.

Below is a list of pairs of emotions which you may have experienced 6 months before your fall. Please determine whether you are closer to one emotion or the other. For instance, if you felt very bored, you would circle number "1"; if you felt very interested you would circle "7". If you felt neither bored, nor interested, you would circle "4". Please circle only one number for each pair of emotions.

Bored	1	2	3	4	5	6	7	Interested
Unhappy	1	2	3	4	5	6	7	Happy
Helpless	1	2	3	4	5	6	7	In control
Worried	1	2	3	4	5	6	7	Relaxed
Dissatisfied	1	2	3	4	5	6	7	Satisfied
Unattractive	1	2	3	4	5	6	7	Attractive
Unhopeful	1	2	3	4	5	6	7	Hopeful
Lacking confidence	1	2	3	4	5	6	7	Self-confident
Emotional	1	2	3	4	5	6	7	Stable
Worthless	1	2	3	4	5	6	7	Valuable
Forgetful	1	2	3	4	5	6	7	Mindful
Irritable	1	2	3	4	5	6	7	Calm
Unfeeling	1	2	3	4	5	6	7	Caring
Clumsy	1	2	3	4	5	6	7	Agile
Dependent	1	2	3	4	5	6	7	Independent
Inactive	1	2	3	4	5	6	7	Active
Difficult	1	2	3	4	5	6	7	Cooperative
Withdrawn	1	2	3	4	5	6	7	Talkative
Unfriendly	1	2	3	4	5	6	7	Friendly
Stupid	1	2	3	4	5	6	7	Clever

Here is the same list of emotions and the instruction is the same as above, however, please answer in relation to how you feel right now.

Bored	1	2	3	4	5	6	7	Interested
Unhappy	1	2	3	4	5	6	7	Happy
Helpless	1	2	3	4	5	6	7	In control
Worried	1	2	3	4	5	6	7	Relaxed
Dissatisfied	1	2	3	4	5	6	7	Satisfied
Unattractive	1	2	3	4	5	6	7	Attractive
Unhopeful	1	2	3	4	5	6	7	Hopeful
Lacking confidence	1	2	3	4	5	6	7	Self-confident
Emotional	1	2	3	4	5	6	7	Stable
Worthless	1	2	3	4	5	6	7	Valuable
Forgetful	1	2	3	4	5	6	7	Mindful
Irritable	1	2	3	4	5	6	7	Calm
Unfeeling	1	2	3	4	5	6	7	Caring
Clumsy	1	2	3	4	5	6	7	Agile
Dependent	1	2	3	4	5	6	7	Independent
Inactive	1	2	3	4	5	6	7	Active
Difficult	1	2	3	4	5	6	7	Cooperative
Withdrawn	1	2	3	4	5	6	7	Talkative
Unfriendly	1	2	3	4	5	6	7	Friendly
Stupid	1	2	3	4	5	6	7	Clever

Here is the same list of emotions and the instruction is the same as above, however, please answer in relation to how you believe you would feel in the 6 months.

Bored	1	2	3	4	5	6	7	Interested
Unhappy	1	2	3	4	5	6	7	Happy
Helpless	1	2	3	4	5	6	7	In control
Worried	1	2	3	4	5	6	7	Relaxed
Dissatisfied	1	2	3	4	5	6	7	Satisfied
Unattractive	1	2	3	4	5	6	7	Attractive
Unhopeful	1	2	3	4	5	6	7	Hopeful
Lacking confidence	1	2	3	4	5	6	7	Self-confident
Emotional	1	2	3	4	5	6	7	Stable
Worthless	1	2	3	4	5	6	7	Valuable
Forgetful	1	2	3	4	5	6	7	Mindful
Irritable	1	2	3	4	5	6	7	Calm
Unfeeling	1	2	3	4	5	6	7	Caring
Clumsy	1	2	3	4	5	6	7	Agile
Dependent	1	2	3	4	5	6	7	Independent
Inactive	1	2	3	4	5	6	7	Active
Difficult	1	2	3	4	5	6	7	Cooperative
Withdrawn	1	2	3	4	5	6	7	Talkative
Unfriendly	1	2	3	4	5	6	7	Friendly
Stupid	1	2	3	4	5	6	7	Clever

**Thank you for helping us understand how you feel about your fall.**

## Appendix 9b: Questionnaire – Polish

### Rekonwalescencja po upadku

Proszę wypełnić poniższą ankietę, co powinno zająć ok. 20-30 minut. Podane informacje będą wykorzystane w celach naukowych. Poufność jest zagwarantowana. Wypełnienie ankiety jest równoznaczne ze zgodą na udział w badaniu.

#### Dane demograficzne:

1. Wiek .....
2. Płeć  Kobieta  Mężczyzna
3. Czy uważa się Pan/Pani za osobę religijną?  Tak  Nie
4. Wyznanie religijne: .....
5. Proszę wymienić swoje długoterminowe problemy zdrowotne: .....

#### Informacje o upadku:

1. Liczba upadków w ostatnich 12 miesiącach: .....
2. Czas ostatniego upadku:

<input type="checkbox"/> w przeciągu tygodnia	<input type="checkbox"/> 1-2 tygodni temu	<input type="checkbox"/> 2-4 tygodni temu	<input type="checkbox"/> 1-2 miesięcy temu	<input type="checkbox"/> 2-6 miesięcy temu	<input type="checkbox"/> Ponad 6 miesięcy temu
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3. Miejsce upadku:  Dom  Poza domem  W środku budynku  Na dworze

#### 4. Czy ktoś pomógł Panu/Pani wstać po upadku?

- Nie, wstałem/wstałam samodzielnie
- Tak, ktoś pomógł mi zaraz po upadku
- Tak, ale musiałem/musiałam poczekać parę minut
- Tak, ale musiałem/musiałam poczekać prawie godzinę
- Tak, ale musiałem/musiałam poczekać parę godzin

5. Proszę zakreślić te urazy, których Pan/Pani doświadczył(a) w wyniku upadku i wskazać ich na ciele.

Uraz	<input type="checkbox"/> Brak	<input type="checkbox"/> Szrama/ rozcięcie	<input type="checkbox"/> Siniak/ krwiak	<input type="checkbox"/> Skręcenie/ nadwyrężenie	<input type="checkbox"/> Złamanie	<input type="checkbox"/> Inne
Lokalizacja						

6. Jaka była przyczyna upadku według Pana/Pani? .....

7. Które z poniższych wyrażen jest najbliższe powodowi, dla którego Pan/Pani upadł(a)?

- Ponieważ się starzeję
- Moje zdrowie nie jest w dobrym stanie
- Jestem typem osoby, której takie sytuacje się zdarzają (jestem np. niezdarny, nieuważny)
- Z powodu pogody czy otoczenia
- Ponieważ coś zrobiłem/zrobiłam lub nie zrobiłem/zrobiłam
- Ponieważ ktoś coś zrobił lub nie zrobił
- Pech

8. Czy mógł/mogła Pan/Pani zapobiec upadkowi?

Zdecydowanie	1	2	3	4	5	6	7	Na pewno nie
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9. Jak bardzo prawdopodobne jest to, że powód, który spowodował u Pana/Pani ostatni upadek, może spowodować następny upadek w przeciągu najbliższych 6 miesięcy?

Bardzo prawdopodobne	1	2	3	4	5	6	7	Mało prawdopodobne
----------------------	---	---	---	---	---	---	---	--------------------

10. Czy boi się Pan(i) znowu upaść?  Tak  Nie

W tej sekcji pytania dotyczyć będą tego, jak bardzo martwi się Pan(i) prawdopodobieństwem upadku podczas wykonywania codziennych czynności. Jeśli Pan(i) nie wykonuje niektórych czynności, czy martwiłby/martwiłaby się Pan/Pani, gdyby miał(a)by Pan (i) wykonywać te czynności.

Skala: 1 = brak niepokoju, 2 = lekki niepokój, 3 = spory niepokój, 4 = duży niepokój

Ubieranie się, rozbieranie się	1	2	3	4
Kąpiel, prysznic	1	2	3	4

Wstawanie z krzesła, siadanie	1	2	3	4
Chodzenie po schodach	1	2	3	4
Ściąganie przedmiotów z góry, podnoszenie przedmiotów z podłogi	1	2	3	4
Wchodzenie pod górę i z górki	1	2	3	4
Wychodzenie na różne okazje: do rodziny, spotkania, kościoła.	1	2	3	4

W tabeli przedstawione są problemy, które mogą dotyczyć ludzi, którzy doznali upadku. Proszę zaznaczyć odpowiedzi, które są najbliższe tego, jak Pan(i) czuł(a) się w ostatnim miesiącu. Proszę odpowiadać mając na myśli ostatni upadek.

Skala: 1 = wcale, 5 = bardzo

1	Powtarzające, natrętne wspomnienia, myśli, wizualizacje upadku	1	2	3	4	5
2	Powtarzające, natrętne sny o upadku	1	2	3	4	5
3	Niezamierzone uczucie lub zachowanie tak, jakby miał znów się zdarzyć	1	2	3	4	5
4	Niekomfortowe uczucie, kiedy coś przypomina o upadku	1	2	3	4	5
5	Reakcje fizjologiczne: problemy z oddychaniem, sercem, pocenie na myśl o upadku	1	2	3	4	5
6	Unikanie rozmowy, emocji czy myślenia na temat upadku	1	2	3	4	5
7	Unikanie czynności czy sytuacji, które przypominają o upadku	1	2	3	4	5
8	Problem z pamięcią na temat ważnych aspektów upadku	1	2	3	4	5
9	Brak zainteresowania czynnościami, które wcześniej były interesujące	1	2	3	4	5
10	Poczucie separacji, dystansu od ludzi	1	2	3	4	5
11	Emocjonalne odrętwienie, brak pozytywnych emocji do bliskich	1	2	3	4	5
12	Poczucie tego, że przyszłość się skróca	1	2	3	4	5
13	Problemy ze snem, zasypianiem od czasu upadku	1	2	3	4	5
14	Irytacja, złość od czasu upadku	1	2	3	4	5
15	Problemy z koncentracją od upadku	1	2	3	4	5
16	Czułość, bycie 'na straży'	1	2	3	4	5
17	Nerwowość, łatwo dać się zaskoczyć	1	2	3	4	5

W następnej sekcji zaprezentowane są charakterystyki dwóch osób. Podanych jest 12 par charakterystyk. Z każdej z par charakterystyk proszę wybrać jedną odpowiedź, która bardziej przypomina Pana/Pani zachowanie.

	Osoba A	Osoba B
1	<input type="checkbox"/> Koncentruję całą energię na kilku aspektach rekonwalescencji.	<input type="checkbox"/> Koncentruję się na wielu aspektach mojej rekonwalescencji.
2	<input type="checkbox"/> Skupiam całą energię na celu rekonwalescencji.	<input type="checkbox"/> Dzielę energię na wielu celach rekonwalescencji.
3	<input type="checkbox"/> Myśląc, co jest ważne w mojej rekonwalescencji, wybieram tylko 1 lub 2 cele rekonwalescencji.	<input type="checkbox"/> Myśląc, co jest ważne w mojej rekonwalescencji, czekam na to, co się stanie, zamiast obrać sobie cel
4	<input type="checkbox"/> Kiedy coś nie idzie po mojej myśli w mojej rekonwalescencji, obieram sobie 1 lub 2 cele, które są dla mnie najważniejsze.	<input type="checkbox"/> Kiedy coś nie idzie po mojej myśli w mojej rekonwalescencji, ciągle staram się osiągnąć wszystkie swoje cele.
5	<input type="checkbox"/> Kiedy nie mogę czegoś zrobić, co jest ważne w mojej rekonwalescencji, szukam nowego celu.	<input type="checkbox"/> Kiedy nie mogę zrobić czegoś ważnego w mojej rekonwalescencji, dzielę swoją energię pomiędzy różne inne zajęcia.
6	<input type="checkbox"/> Kiedy coś mi nie wychodzi tak dobrze, jak w przeszłości, zastanawiam się, co jest dla mnie ważne	<input type="checkbox"/> Kiedy coś mi nie wychodzi tak dobrze, jak w przeszłości, czekam na to, co się stanie
7	<input type="checkbox"/> Staram się osiągnąć obrane cele rekonwalescencji.	<input type="checkbox"/> Kiedy nie mogę osiągnąć celu, nie próbuję innych opcji.
8	<input type="checkbox"/> Robię wszystko, co w mojej mocy, aby osiągnąć obrany cel.	<input type="checkbox"/> W mojej rekonwalescencji czekam na to, co się stanie, może problem się sam rozwiąże.
9	<input type="checkbox"/> Dedykuję całą energię swojej rekonwalescencji, bo jest dla mnie ważna.	<input type="checkbox"/> Ciężko mi dedykować całą swoją energię rekonwalescencji, nawet jeśli jest dla mnie ważna.
10	<input type="checkbox"/> Jeśli nie mogę osiągnąć swojego celu, próbuję innych rozwiązań, aby osiągnąć swój cel.	<input type="checkbox"/> Jeśli nie mogę osiągnąć swojego celu, daję za wygraną.
11	<input type="checkbox"/> Jeśli coś idzie nie po mojej myśli, pytam innych o radę lub pomoc	<input type="checkbox"/> Jeśli coś idzie nie po mojej myśli, staram się zdecydować, co zrobić. Nie pytam innych.
12	<input type="checkbox"/> Kiedy napotykam przeszkody, bardziej się staram, aby osiągnąć swój cel rekonwalescencji.	<input type="checkbox"/> Kiedy napotykam przeszkodę, godzę się z tym, że nie uda mi się osiągnąć zamierzonego celu.

W następnej sekcji podane są pary przeciwstawnych emocji. Proszę wybrać odpowiedź, która bliższa jest pani emocjom przed upadkiem; np.: jeśli bardzo martwił(a) się Pan(i) przed upadkiem, proszę zaznaczyć odpowiedź "1"; jeśli czuł(a) się Pan(i) bardzo zrelaksowany/zrelaksowana, proszę zaznaczyć odpowiedź "7"; jeśli czuł(a) się Pan(i) ani zrelaksowany, ani zestresowany, to proszę wybrać odpowiedź "4".

Znudzony	1	2	3	4	5	6	7	Zainteresowany
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Nieszczęśliwy	1	2	3	4	5	6	7	Szczęśliwy
Bezradny	1	2	3	4	5	6	7	Mający kontrolę
Martwiący się	1	2	3	4	5	6	7	Zrelaksowany
Niezadowolony	1	2	3	4	5	6	7	Zadowolony
Nieatrakcyjny	1	2	3	4	5	6	7	Atrakcyjny
Bez nadziei	1	2	3	4	5	6	7	Pełen nadziei
Bez pewności siebie	1	2	3	4	5	6	7	Pewny siebie
Emocjonalny	1	2	3	4	5	6	7	Stabilny
Nie nie wart	1	2	3	4	5	6	7	Wartościowy
Zapominalski	1	2	3	4	5	6	7	Świadomy
Podirytowany	1	2	3	4	5	6	7	Spokojny
Niezuły	1	2	3	4	5	6	7	Troskliwy
Nieporadny	1	2	3	4	5	6	7	Zdolny
Zależny	1	2	3	4	5	6	7	Niezależny
Nieaktywny	1	2	3	4	5	6	7	Aktywny
Trudny	1	2	3	4	5	6	7	Chętny do współpracy
Wycofany	1	2	3	4	5	6	7	Rozmowny
Nieprzyjacielski	1	2	3	4	5	6	7	Przyjacielski
Głupi	1	2	3	4	5	6	7	Mądry

W następnym sekcji przedstawiona jest taka sama tabela i instrukcje są te same. Proszę odpowiedzieć, jak się Pan(i) czuje w tym momencie.

Znużony	1	2	3	4	5	6	7	Zainteresowany
Nieszczęśliwy	1	2	3	4	5	6	7	Szczęśliwy
Bezradny	1	2	3	4	5	6	7	Mający kontrolę
Martwiący się	1	2	3	4	5	6	7	Zrelaksowany
Niezadowolony	1	2	3	4	5	6	7	Zadowolony
Nieatrakcyjny	1	2	3	4	5	6	7	Atrakcyjny
Bez nadziei	1	2	3	4	5	6	7	Pełen nadziei
Bez pewności siebie	1	2	3	4	5	6	7	Pewny siebie
Emocjonalny	1	2	3	4	5	6	7	Stabilny
Nie nie wart	1	2	3	4	5	6	7	Wartościowy
Zapominalski	1	2	3	4	5	6	7	Świadomy
Podirytowany	1	2	3	4	5	6	7	Spokojny
Niezuły	1	2	3	4	5	6	7	Troskliwy
Nieporadny	1	2	3	4	5	6	7	Zdolny
Zależny	1	2	3	4	5	6	7	Niezależny
Nieaktywny	1	2	3	4	5	6	7	Aktywny
Trudny	1	2	3	4	5	6	7	Chętny do współpracy
Wycofany	1	2	3	4	5	6	7	Rozmowny
Nieprzyjacielski	1	2	3	4	5	6	7	Przyjacielski
Głupi	1	2	3	4	5	6	7	Mądry

W następnym sekcji przedstawiona jest taka sama tabela i instrukcje są te same. Proszę odpowiedzieć, jak się Pan(i) myśli będzie czuł w przyszłości.

Znużony	1	2	3	4	5	6	7	Zainteresowany
Nieszczęśliwy	1	2	3	4	5	6	7	Szczęśliwy
Bezradny	1	2	3	4	5	6	7	Mający kontrolę
Martwiący się	1	2	3	4	5	6	7	Zrelaksowany
Niezadowolony	1	2	3	4	5	6	7	Zadowolony
Nieatrakcyjny	1	2	3	4	5	6	7	Atrakcyjny
Bez nadziei	1	2	3	4	5	6	7	Pełen nadziei
Bez pewności siebie	1	2	3	4	5	6	7	Pewny siebie
Emocjonalny	1	2	3	4	5	6	7	Stabilny
Nie nie wart	1	2	3	4	5	6	7	Wartościowy
Zapominalski	1	2	3	4	5	6	7	Świadomy
Podirytowany	1	2	3	4	5	6	7	Spokojny
Niezuły	1	2	3	4	5	6	7	Troskliwy
Nieporadny	1	2	3	4	5	6	7	Zdolny
Zależny	1	2	3	4	5	6	7	Niezależny
Nieaktywny	1	2	3	4	5	6	7	Aktywny
Trudny	1	2	3	4	5	6	7	Chętny do współpracy
Wycofany	1	2	3	4	5	6	7	Rozmowny
Nieprzyjacielski	1	2	3	4	5	6	7	Przyjacielski
Głupi	1	2	3	4	5	6	7	Mądry

## Appendix 10a – Debrief Form – English



Psychology  
School of Design, Engineering &  
Computing  
Bournemouth University  
Poole  
BH12 5BB

### Participant Debrief Form

#### *Psychological adjustment to accidental falls.*

Thank you for taking part in the interview. The purpose of this study is to learn more about psychological adjustment to accidental falls. Falls are the most serious and frequent home accidents among elderly and may significantly affect the life on an older person. For instance, falls may result in a challenge to one's identity or may disrupt the future plans of an older person. Therefore the focus of the study is on the meaning that one ascribes to the fall and how it is related to the post-fall recovery.

If you have any questions about this study please contact me, Natalia Adamczewska, email: [nadamczewska@bournemouth.ac.uk](mailto:nadamczewska@bournemouth.ac.uk), or by post at the above address.

If you experience any form of distress after participating in the study, please visit the websites such as: <http://www.supportline.org.uk/> or <http://www.samaritans.org/>. You may also wish to contact the falls team at the local hospital, your GP, Community Nurse, Counsellor or another key worker.



## Appendix 10b – Debrief Form – Polish



**Psychology**  
School of Design, Engineering &  
Computing  
Bournemouth University  
Poole  
BH12 5BB

### **Podsumowanie**

#### *Rekonwalescencja po upadku*

Dziękujemy za wypełnienie ankiety.

Upadek jest najgroźniejszym i najczęstszym wypadkiem pośród osób starszych, który często znacząco zmienia życie osób w podeszłym wieku. Celem tego badania jest zdobycie informacji na temat tego, jakie aspekty życia osoby w podeszłym wieku są najbardziej podatne na zmiany po upadku i tego, jaki stosunek ci ludzie mają do swojej rekonwalescencji.

W razie dalszych pytań, proszę o kontakt mailowy: Natalia Adamczewska, [nadamczewska@bournemouth.ac.uk](mailto:nadamczewska@bournemouth.ac.uk), telefoniczny: 501 408 287, bądź listowny na podany adres.

Jeśli w związku z badaniem, odczuwa Pan/Pani jakikolwiek dyskomfort, proszę o skontaktowanie się z pielęgniarką, lekarzem pierwszego kontaktu, z psychologiem lub z duszpasterzem.

## **Appendix 11a: Qualitative study: Participant Information Sheet - English.**

### **PARTICIPANT INFORMATION SHEET**

#### **Full title of project: Psychological recovery after accidental falls**

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

#### **What is the purpose of the project?**

The aim of the study is to learn about psychological adjustment to falls, the healthcare provided to you and the treatment you have received after your fall.

#### **Why have I been chosen?**

You have been chosen because you have completed the questionnaire and you have agreed to take part in the next studies.

#### **Do I have to take part?**

Your participation is voluntary and you may withdraw your participation at any point of the study without giving any reason.

#### **What do I have to do?**

You will be given a consent form which you will be asked to sign prior to the interview. During the interview you will be asked questions related to your life (you will decide what you want to talk about) and your fall. The interview should take around one hour.

#### **What are the possible disadvantages and risks of taking part?**

Thinking about your fall may be upsetting for you therefore you are free to withdraw your participation if you do not wish to continue. If the interview upsets you and you feel you need additional help, you will be advised to contact your GP, counsellor or another key worker.

#### **What are the possible benefits of taking part?**

Some may find it rewarding to help with research. At the end of the second interview which will take place in 6 months you will be paid £8 for your participation.

#### **Will my taking part in this project be kept confidential?/ What will happen to the results of the research project?**

Your contact information will be stored securely for one year and only the researcher (Natalia Adamczewska) will have an access to it. During this time you can withdraw your participation at any time. After the data becomes anonymous you will not be able to withdraw your participation.

The interview will be audio recorded and then transcribed onto computer. Participants will be given ID numbers so they will not be readily identifiable. The audio records and transcriptions will be stored securely and protected from intrusion. Only the researcher and her supervisors: Dr Samuel Nyman, Prof. Jonathan Parker and Prof. Peter Coleman) will have

an access to the transcripts and the audio records. Your response will be treated with full confidentiality. The data gained from the interview will be analysed by myself, Natalia Adamczewska. You can request a copy of the interview transcript. The transcripts and the audio records will be stored securely for 5 years.

**What type of information will be sought from me and why is the collection of this information relevant for achieving the research project's objectives?**

You will be asked questions regarding your life, your fall and your recovery. The interview will be audio recorded. The information gained from the research will be used to provide insights into the experience of falls which may lead into further studies into the area of falls.

**Contact for further information**

Name, position and contact details of researcher: Natalia Adamczewska, PhD candidate. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: nadamczewska@bournemouth.ac.uk. Tel. 668985754.

Name, position and contact details of supervisor: Dr Samuel R Nyman, Senior Lecturer.. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Tel: +44 01202 968179, Email: snyman@bournemouth.ac.uk.

In the event of a complaint contact: Matt Bentley, Deputy Dean – Research And Professional Practice. Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: mbentley@bournemouth.ac.uk.

## **Appendix 11b: Qualitative study: Participant Information Sheet - Polish.**

### **KARTA INFORMACYJNA UCZESTNIKA BADANIA**

#### **Full title of project: Psychological recovery after accidental falls**

Zanim zdecyduje się Pan/Pani na udział w badaniu, proszę uważnie zapoznać się z informacjami na temat celu i charakteru badania. Ewentualne pytania proszę kierować do badacza. Proszę nie spieszyć się z podjęciem decyzji.

#### **Jaki jest cel tego badania?**

Celem badania jest zdobycie wiedzy na temat tego, jak pacjenci dochodzą do siebie po upadkach; opieki, jaką otrzymują oraz rehabilitacji.

#### **Kto może wziąć udział w badaniu?**

Osoby, które wypełniły kwestionariusz i zgodziły się na dalszy kontakt.

#### **Czy udział w badaniu jest obowiązkowy?**

Udział w badaniu jest dobrowolny, a uczestnik może wycofać się bez podania powodu w dowolnym momencie trwania badania.

#### **Jaki będzie przebieg badania?**

Po zapoznaniu się z kartą informacyjną, uczestnik zostanie poproszony o podpisanie formularza zgody na uczestnictwo w badaniach. Następnie rozpocznie się wywiad z uczestnikiem, który będzie nagrywany dyktafonem. Wywiad będzie dotyczył życia uczestnika (badany decyduje, o czym chce mówić), upadku, rekonwalescencji i planów na przyszłość. Badanie powinno trwać ok. 1 godziny, ale czas trwania wywiadu zależy od uczestnika badania.

#### **Jakie są zagrożenia związane z badaniem?**

Nie ma żadnych przewidzianych zagrożeń. Jedyne dyskomforty związane z badaniem może ewentualnie dotyczyć samego opowiadania o upadku i możliwej traumie z nim związanej.

#### **Jakie są korzyści związane z badaniem?**

Po drugim badaniu uczestnik otrzyma 40zł.

#### **Czy poufność jest gwarantowana?**

Dane kontaktowe będą zachowane przez rok, po czym zostaną zniszczone. Przez ten czas można wycofać swoje uczestnictwo bez podania przyczyny. Po tym, jak uczestnictwo staje się anonimowe, nie można go wycofać.

Wywiady zostaną nagrane dyktafonem i spisane na komputerze. Uczestnicy otrzymają numery, tak aby ich uczestnictwo nie mogło być w żaden sposób wyjawione. Nagrania i transkrypcje (bez nazwisk) będą przechowywane przez 5 lat i wgląd do nich będą mieć tylko badacz oraz jej promotorzy: Dr Samuel Nyman, Prof. Jonathan Parker and Prof. Peter Coleman. Uczestnik może poprosić o kopię nagrania i transkrypcji. Wywiad zostanie przeanalizowany przez badacza.

### **Jakiego rodzaju pytania zostaną mi zadane?**

Pytania będą dotyczyły upadku, emocji z tym związanych, planów na rehabilitację oraz tego, jak Pan/Pani postrzega siebie na przestrzeni czasu. Informacje podane przyczynią się do lepszego zrozumienia tego, jak osoby po upadkach radzą sobie z rekonwalescencją.

### **Kontakt w razie dalszych pytań**

Nazwisko, pozycja i kontakt do badacza: Natalia Adamczewska, doktorantka. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: [nadamczewska@bournemouth.ac.uk](mailto:nadamczewska@bournemouth.ac.uk). Tel: 668985754.

Nazwisko, pozycja i kontakt do promotora: Dr Samuel R Nyman, Starszy wykładowca. Department of Psychology, Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Tel: +44 01202 968179, Email: [snyman@bournemouth.ac.uk](mailto:snyman@bournemouth.ac.uk).

W razie zażaleń: Matt Bentley, Zastępca dziekana. Faculty of Science and Technology, Bournemouth University. Poole, Dorset, BH12 5BB. Email: [mbentley@bournemouth.ac.uk](mailto:mbentley@bournemouth.ac.uk).



## Appendix 12b: Qualitative study: Consent Form - Polish

### FORMULARZ ZGODY NA DALSZY KONTAKT

Temat projektu: Rekonwalescencja po upadkach

Nazwisko, pozycja i dane kontaktowe badacza: Natalia Adamczewska, doktorantka.  
Department of Psychology, Faculty of Science and Technology, Bournemouth University.  
Poole, Dorset, BH12 5BB. Email: [nadamczewska@bournemouth.ac.uk](mailto:nadamczewska@bournemouth.ac.uk). Tel: 668985754.

Nazwisko, pozycja i dane kontaktowe promotora: Dr Samuel R Nyman, Starszy wykładowca.  
Department of Psychology, Faculty of Science and Technology, Bournemouth University.  
Poole, Dorset, BH12 5BB. Tel: +44 01202 968179, Email: [snyman@bournemouth.ac.uk](mailto:snyman@bournemouth.ac.uk).

W razie zażaleń: Matt Bentley, Zastępca dziekana. Faculty of Science and Technology,  
Bournemouth University. Poole, Dorset, BH12 5BB. Email: [mbentley@bournemouth.ac.uk](mailto:mbentley@bournemouth.ac.uk).

Proszę zakreślić poniższe

Potwierdzam to, że rozumiem informacje zawarte w 'Karcie informacyjnej uczestnika badania' oraz to, że miałem/miałam okazję zadać pytania badaczowi.	
Rozumiem to, że moje uczestnictwo w badaniu jest dobrowolne i mam prawo wycofać się bez podania powodu w dowolnym momencie trwania badania. Jeśli nie chcę odpowiadać na któreś z pytań, to mam do tego prawo.	
Rozumiem to, że zgromadzone dane z tego badania będą chronione przed osobami trzecimi i zgadzam się jedynie na udostępnienie ich badaczowi i promotorom badacza.	
Zgadzam się na nagranie wywiadu dyktafonem.	
Zgadzam się na cytowanie moich wypowiedzi.	
Zgadzam się na uczestnictwo w tym badaniu.	

\_\_\_\_\_  
Nazwisko uczestnika

\_\_\_\_\_  
Data

\_\_\_\_\_  
Podpis

\_\_\_\_\_  
Numer telefonu uczestnika

\_\_\_\_\_  
Nazwisko badacza

\_\_\_\_\_  
Data

\_\_\_\_\_  
Podpis

Kiedy formularz zostanie podpisany przez badacza i uczestnika, uczestnik otrzyma kopię.  
Podpisane kopie formularza będą przechowywane w bezpiecznym miejscu.

## Appendix 13a: Interview guide - pilot study – English

### I. Biographical context

1. Tell me something about your life:
  - How long have you been retired? What did you do before your retirement?
  - Where do you live? Who do you live with?
  - Do you stay at home a lot? What do you normally do during the day?

### II. Fall

2. General question about the fall: Could you tell me about your last fall?
  - When and where it happened?
  - Tell me what happened at the time of fall and what happened next?
  - What did you feel when you needed to leave your home and stay at the hospital?
  - How did you feel at the hospital?
  - What do you think might have improved your stay at the hospital?
3. How has the fall affected your life?
  - How did it affect your daily routine?
  - Many people after they experience a fall need to ask for help, for example they need to stay in bed so other people, such as their relatives need to prepare meals for them. Would you say that after the fall you are as independent as before the fall? Why? How do you feel about that?

### III. Social attitude

4. Do you think people around you have changed their behaviour, attitude towards you?
  - Do you think their thinking about you have changed since you had the fall?
  - Is there anything they do or do not do now that they did or did not do before your fall?
  - What may be the reason of their acting towards you after you had a fall?

### IV. Trauma

5. Some people, after they had a fall, experience disruptive memories, for instance intense 'flashbulb' memories about the fall which are distressful for them. They can re-experience the



fall that they had in the past when they are faced with some objects, places, events. Why do you think you have or have not had such 'flashbulb' memories?

- If you have had such disruptive memories, could you describe the memories?
- How do you feel when you experience such memories?
- Have they changed over time? Are they more or less intensive now than before?
- Why have you or have you not talked about it with someone?

#### V. Fall attribution

6. Why do you think you fell over?

- What would you say that the fall was related to?
- How could you have prevented the fall?

#### VI. Fear of falls

7. How would you describe your feelings towards future falls which may happen to you?

- Many people experience fear of falls. Why would you say you are or are not one of them?
- What do you think would happen after the next fall?
- What could you do to prevent future falls?

#### VII. Coping

8. You had a fall, so you probably needed to make some adjustments since you returned home from hospital. Tell me about the ways you that help you recover from the fall. How others have helped you after the fall?

- Family
- Social support
- Health care professionals

9. Some people find religion, any spiritual experiences helpful after they experienced a fall.

- Why do you think such practices are helpful for other people?
- Why would you say such experiences are or are not helpful for you?
- Have your spiritual experienced changed since you had a fall? Why?

10. What did the health professionals at the hospital advise you to do that could help you in your recovery at home? Were you given any instructions?

- Have you done what they advised you to do?
- What do you think the society's opinion is about those activities, solutions?

11. Do you find it easier to talk about the fall now? Why?

## Appendix 13b: Interview guide - pilot study – Polish

### Faza I:

#### **I. Przeszłość: biografia**

##### 1. Proszę opowiedzieć o swoim życiu:

- Jak długo jest Pan/Pani na emeryturze? Co Pan/Pani wcześniej robił(a)?
- Gdzie Pan/Pani żyje? Z kim?
- Czy przebywa Pan/Pani dużo w domu? Co Pan/Pani robi?

#### **II. Upadek**

##### 2. Proszę o nich opowiedzieć o upadku.

- Kiedy, gdzie, jak to się stało?
- Co się dalej stało?
- Jak się Pan(i) dostał(a) do szpitala?
- Proszę opowiedzieć o pobycie w szpitalu – co można było ulepszyć?

##### 3. Jak upadek na Pana/Panią wpłynął?

- Codzienna rutyna?
- Wielu ludzi prosi innych o pomoc, np. Rodzina pomaga im w codziennych czynnościach.

Czy upadek wpłynął na Pana/Pani niezależność? Jak się Pan/Pani z tym czuje?

#### **III. Społeczny wymiar upadku**

- Jak upadek zmienił codzienne życie Pana/Pani rodziny?
- Czy jest coś, czego teraz nie mogą zrobić?
- Co może być powodem ich zachowania?

#### **IV. Trauma**

- Niektórzy ludzie odczuwają pewien dyskomfort po upadku, np. mają problemy ze snem, koszmary, boją się znowu upaść, zwłaszcza, jak próbują chodzić czy podczas rehabilitacji; albo też nagle nachodzi ich wizja upadku.

- Czy miał(a) Pan(i) takie problemy? Proszę o nich opowiedzieć.
- Czy miała pani natretne myśli i wspomnienia o upadku?
- Czy to się z czasem zmieniło?
- Czy rozmawiał(a) Pan/Pani o tym z kims?

## **V. Przyczyny upadku**

Dlaczego Pan/Pani upadł?

- Jaki jest powód czy powody upadku?
- Czy można było tego uniknąć?
- Czy martwi się Pan(i) możliwością ponownego upadku? Jeśli tak, to proszę o tym opowiedzieć.

## **VI. Strach przed upadkiem**

- Jak Pan/Pani opisze swoje odczucia co do przyszłych upadków?
- Wielu ludzi obawia się upadków. Czy jest Pan/Pani jedna z tych osób?
- Co można zrobić, żeby uniknąć upadków?

## **VII. Radzenie sobie**

Po upadku prawdopodobnie musiał(a) Pan/Pani dokonać pewnych zmian w domu. Jak Pan/Pani radził(a) sobie z tymi zmianami? Jak inni Panu/Pani pomagali?

- Rodzina
- Inni ludzie
- Służba zdrowia

Dla niektórych ludzi religia jest bardzo pomocna.

- Dlaczego niektórym ludziom to pomaga?
- Dlaczego to nie pomaga?
- Czy Pana/Pani stosunek do religii się zmienił po upadku? Dlaczego?

Co pracownicy służby zdrowia Panu/Pani radzili zrobić po powrocie do domu? Czy dali jakies wytyczne?

- Czy stosował(a) się Pan/Pani do tych instrukcji?
- Co inni ludzie sądzą o tych wytycznych?

Czy łatwiej jest Panu/Pani mówić o upadku teraz?

## Appendix 14a: Interview guide – English

### Phase I:

#### The past: biographical context

1. Tell me something about your life since your childhood. Take as much time as you need.

#### The present: fall

2. If you had had any falls before your last fall, please tell me about them.
3. Tell me about your last fall.
  - When, where and how did it happen?
  - How did you get up?
  - Tell me about your stay at hospital.
    - Were you well informed about your condition at hospital?
4. What was the cause of your fall?
  - How the fall could have been prevented?
5. There are people who experience some difficulties after they have fallen. They have problems with sleep, they have nightmares about their fall; they are worried about falling again, especially when trying to walk or during their rehabilitation, they are often bothered by the memory of their fall and the possibility of falling again. Please describe any of such problems you have had (if you have had any).
  - If you have experienced any of such problems, how have you dealt with them?
  - If you have any concerns about falling, please tell me about them.
6. How has your experience of falling affected your everyday life?
  - Daily routine.
  - How do you feel about being unable to perform some activities and others taking care of you?
  - How have your friends, family supported you, helped you?
    - Do you think they have given you enough support or there is something that might have benefited you more but they have not done? What would that be?
  - Some people feel separated from the world outside during their recovery because their mobility is limited. Why would you say you are or you are not one of them?
  - The fall has affected your life in some ways you have mentioned. How do you cope with those changes?
  - For some people religious practices, faith, praying, meditating are very calming. Have you thought about religion, such practices as helpful in your situation?

#### The future

7. Tell me how you picture your future.
  - How do you feel about your future?
  - Would you say that your fall has influenced your plans for the future? If yes, in what ways?

#### The plans and strategies

8. If you have thought about some strategies, plans for your recovery, could you tell me about them? (for instance, joining rehabilitation programmes, exercising at home, practicing walking alone, with others or with devices, etc.)
  - What are your concerns about the recovery?
  - Some people after their fall, want to be as active as they used to be, some only want to be able to walk, some are ready to use walking devices, some people just give in. What is it that you want to achieve during your recovery?
  - Have you thought about making any changes (for instance removing rugs at home or changing shoes for more comfortable and safe) to prevent you from falling? If yes, what are your plans?
  - Have members of staff advised you what to do that could help you in your recovery at home? If yes, what are the instructions?
9. Is there anything about you fall that I have not asked you about, but you would like to talk about?

## **Phase 2: Follow up**

### **The past**

1. Last time we talked about your fall and how it influenced your life, your daily routine, future plans. Tell me about your life, what has happened since our last meeting.
2. In our last meeting I asked you if you had any nightmares about your fall, if you were having any bothering memories about the fall, if you worried about falling again. Have you had any of these problems since our last meeting?
  - If you have had any of such problems, have you tried to deal with them? How?
3. Tell me about your recovery.
  - Last time we talked, you had some goal(s) of your recovery in your mind. Do you think you have achieved it (them)?
  - What gave you a sense of direction during your recovery?
  - Were you given any advice at hospital what to do after you leave hospital? Did you follow this advice?
  - What were the activities you enjoyed the most in your recovery?
  - What was the hardest thing for you to do, to cope with during your recovery?
  - If you had any difficulties in your recovery process, how did you approach them?
  - Was there anything, e.g. activity, exercise that seemed to you hard at first, but it was not that hard to perform in the end?
  - Did you ask for help when you couldn't manage something in your recovery?
  - Have you used any devices, such as crutches, since your fall? If yes, how did you feel about that? Do you still need to use them?
  - Is there anything that you used to do before your fall, but now you do not do, or you limit this activity now?
  - Is there any activity, skill, ability (for instance you might have needed to exercise your arms because you had to use crutches) you have decided to improve since you had a fall? If yes, how did you decide to do it?
  - Have you changed anything in your home since your fall (for instance you might have removed rugs, have barriers attached)? If yes, how did you decide to do it?
4. Tell me how your family; friends have supported you in this process of your recovery.
  - Were you happy with the help received?
5. For some people religion, prayers, faith, meditation are very important and such practices are calming for them. Would you say you are one of these people?

### **The present**

6. How satisfied are you with your recovery?
  - What do you think is the main achievement of your recovery?
  - How do you feel about performing daily activities now?
    - Do you think your walking has changed comparing to your walking before your fall? (For instance, you are more cautious, you walk more slowly etc.)
    - Do you feel confident when you go out on your own?
  - Would you say your concern about falling has changed since our last meeting? Why?

### **Past vs. Present**

7. If you were to compare your life now with the life before your fall, what are the similarities and what are the differences?
  - Would you say that you are as active now as you were before the fall?
  - Last time we talked about the problem of feeling separated from the world which is caused by the hospitalization, immobility. Have you had this feeling since our last meeting? If yes, when and what do you think were the reasons for that?
  - Do you think you have changed in any way since your fall?
  - How satisfied are you with your life now and how you were before your fall?
8. Is there anything I have not asked you about related to your fall and the recovery that you want to add?

## Appendix 14b: Interview guide – Polish

### Faza I:

#### **Przeszłość: biografia**

1. Proszę opowiedzieć o swoim życiu zaczynając od dzieciństwa. Może to zająć tyle czasu, ile Panu/Pani potrzeba.
  - Proszę opowiedzieć o rozdziałach swojego życia: dzieciństwie, latach młodości, wczesnej dorosłości, wieku średnim i wieku podeszłym.
    - Najwcześniejsze wspomnienie
    - Relacje: z ważnymi dla Pana/Pani ludźmi, rodzicami, rodziną, przyjaciółmi, szkołą, kościołem.
    - Ważne wydarzenia, wzloty i upadki w każdym rozdziale swojego życia
    - Osobiste przekonania:
      - Wartości
      - Religia
    - Punkty zwrotne w życiu

#### **Terażniejszość: upadek**

2. Jeśli miał(a) Pan(i) wcześniej upadki, proszę o nich opowiedzieć.
3. Proszę opowiedzieć o swoim ostatnim upadku:
  - Kiedy, gdzie, jak to się stało?
  - Co stało się następnie?
    - Czy ktoś Panu/Pani pomógł wstać?
    - Jak się Pan(i) dostał(a) do szpitala?
    - Czy był(a) Pan(i) dobrze poinformowany o swoim stanie w szpitalu?
  - Proszę opowiedzieć o pobycie w szpitalu.
4. Jaki jest powód czy powody upadku?
  - Czy można było tego uniknąć?
5. Niektórzy ludzie odczuwają pewien dyskomfort po upadku, np. mają problemy ze snem, koszmary, boją się znowu upaść, zwłaszcza, jak próbują chodzić czy podczas rehabilitacji; albo też nagle nachodzi ich wizja upadku.
  - Czy miał(a) Pan(i) takie problemy? Proszę o nich opowiedzieć.
  - Czy martwi się Pan(i) możliwością ponownego upadku? Jeśli tak, to proszę o tym opowiedzieć.
  - Jeśli miał(a) Pan(i) te problemy, jak udało się Panu/Pani z nimi uporać?
6. Jak upadek zmienił pana/pani życie?
  - Codzienne życie
  - Jak Pan(i) się czuje z tym, że nie można robić pewnych rzeczy i inni panu/pani pomagają?
  - Niektórzy ludzie czują się odosobnieni podczas rekonwalescencji, bo nie mogą się za bardzo poruszać. Czy pan(i) czuje się odseparowany od innych?

- Jak rodzina, znajomi pomogli panu/pani? Czy ta pomoc była wystarczająca, czy jest coś, co mogli jeszcze zrobić, co panu/pani pomogłoby?
- Dla niektórych ludzi religia, wiara, modlitwa, medytacja są uspakajające. Czy te praktyki są dla pana/pani pomocne?
- Upadek wpłynął na pana/pani życie. Jak sobie pan(i) z tym radzi?

### **Przyszłość**

7. Jak pan(i) wyobraża sobie przyszłość?
  - Jak się pan(i) czuje, myśląc o przyszłości?
  - Czy upadek wpłynął na plany na przyszłość? Jak?

### **Plany i strategie**

8. Jeśli pan(i) myślał(a) o strategiach, planach na rekonwalescencję? Jakie one są? Np. rehabilitacje, ćwiczenia w domu, ćwiczenie chodzenia samemu, z innymi, o kulach itd.
  - Co pana/panią martwi w stosunku do rekonwalescencji?
  - Niektórzy po upadku chcą być tak samo sprawni jak przed upadkiem, niektórzy chcą po prostu znowu chodzić, niektórzy poddają się. Co pan(i) chce osiągnąć?
  - Czy myślał(a) pan(i) o zmianie czegoś, np. usunięciu dywaników, zmianie butów na bezpieczniejsze, żeby zapobiec kolejnym upadkom? Jeśli tak, to co by to było?
  - Czy personel szpitala poradził panu/pani, co może pan(i) zrobić, żeby zapobiec upadkom?
9. Czy jest coś, o co nie zapytałam, a chce pan(i) dodać?

## **Faza II:**

### **Przeszłość:**

1. Ostatnio rozmawialiśmy na temat upadku i jak upadek wpłynął na pana/pani życie. Proszę opowiedzieć o tym, co się od tego momentu wydarzyło.
2. Ostatnio rozmawialiśmy na temat koszmarów, natręczywych wspomnień po upadku. Czy miał(a) pan(i) takie problemu od naszego spotkania?
  - Jeśli tak, to czy i jak sobie pan(i) z nimi poradził(a)?
3. Proszę opowiedzieć o swojej rekonwalescencji.
  - Co dawało panu/pani siłę podczas rekonwalescencji?
  - Ostatnio rozmawialiśmy na temat celu rekonwalescencji. Czy został on osiągnięty?
  - Czy personel szpitala poradził panu/pani, co może pan(i) zrobić po wyjściu ze szpitala? Czy pan(i) zrobił(a) to, co panu/pani poradzono?
  - Co sprawiało panu/pani przyjemność podczas rehabilitacji?
  - Co było najtrudniejsze podczas rehabilitacji?



- Jak sobie pan(i) z tym poradziła?
  - Czy było jakieś zadanie, aktywność, ćwiczenie, które wydawało się trudne, ale później okazało się nie takie trudne?
  - Czy prosił(a) pan(i) o pomoc, kiedy nie mógł/mogła pan/pani czegoś zrobić, osiągnąć?
  - Czy używała pani pewnych sprzętów, np. kul, od czasu upadku? Jak się pan(i) z tym czuł(a)? Czy musi pan(i) ich ciągle używać?
  - Czy jest jakaś czynność, której pan(i) nie wykonuje, albo wykonuje w mniejszym stopniu, niż przed upadkiem?
  - Czy jest jakaś aktywność, zdolność, którą pan(i) postanowił(a) ulepszyć? Np. ćwiczenie ramienia, aby było silniejsze, żeby chodzenie o kulach było bezpieczniejsze. Jeśli tak, to co to było?
  - Czy dokonał(a) pan(i) pewnych zmian w sobie czy środowisku? Np. zainstalowanie barierek pod prysznicem, nad wanną; usunięcie dywaników. Jak się pan(i) na to zdecydował(a)?
4. Jak rodzina, znajomi wspierali pana/panią w procesie rekonwalescencji?
- Czy ta pomoc była wystarczająca?
5. Dla niektórych ludzi religia, wiara, modlitwa, medytacja są uspakajające. Czy te praktyki były dla pana/pani pomocne, jeśli je pan(i) stosowała?

#### **Terażniejszość**

6. Czy jest pan(i) zadowolony/zadowolona z rekonwalescencji?
- Co według pana/pani jest głównym osiągnięciem rekonwalescencji?
  - Jak się pan(i) czuje podczas wykonywania codziennych czynności?
    - Czy pana/pani chód zmienił się po upadku? (jest wolniejszy, ostrożniejszy)
    - Czy czuje się pan(i) pewnie samemu chodząc?
  - Czy boi się pan(i) chodzić tak samo, jak bał(a) się pan(i) podczas naszego ostatniego spotkania?

#### **Przeszłość kontra terażniejszość**

7. Jeśli porówna pan(i) przeszłość z terażniejszością, jakie są podobieństwa i różnice?
- Czy jest pan(i) tak samo aktywny/aktywna, jak przed upadkiem?
  - Ostatnio rozmawialiśmy na temat uczucia separacji po upadku. Czy to się zmieniło? Jeśli tak, to co miało na to wpływ i jak sobie pan(i) z tym uporała?
  - Czy zmienił(a) się pan(i) po upadku?
  - Jak bardzo jest pan(i) usatysfakcjonowany/usatysfakcjonowana ze swojego życia teraz w porównaniu do życia z przed upadku?
8. Czy jest coś, o co nie zapytałam, a chce pan(i) dodać?