Interpreting therapeutic landscape experiences through rural stroke survivors' biographies of disruption and flow

Abstract

This article utilizes the concepts of biographical disruption and biographical flow to expand understandings of how a therapeutic engagement with the rural landscape may change over time for individual stroke survivors. In doing so, it explores how the rural landscape can be experienced as both a therapeutic and a non-therapeutic landscape. The paper draws on in-depth interviews with nineteen stroke survivors living in rural areas in the Northern Netherlands. Because of the cognitively and physically disabling changes that can occur as a result of stroke, interviewees' stories revealed complex and often contradictory experiences of the rural, post-stroke, that varied significantly from their pre-stroke experiences. Our findings demonstrate that the rural holds potential to function as a therapeutic landscape for stroke survivors, especially through its enabling natural and social characteristics. However, the different physical, social, natural, and healthcare aspects of the rural can also disrupt stroke survivors' individual biographies and their sense of self. The privileging of place in these biographies may provide important insights that can help improve the practice of stroke care. It also leads us to conclude that the concepts of biographical flow and disruption, though useful, need to take into account the influence of the wider (spatial) context. We thus coin the terms bio-*geo*-graphical flow and bio-*geo*-graphical disruption, and suggest that these may more accurately reflect the spatio-temporal disruptions and flows experienced by stroke survivors in the post-stroke period.

Keywords: therapeutic landscape; stroke survivors; biographical disruption and biographical flow; qualitative methods; rural areas; the Netherlands

Therapeutic landscapes

The natural environment has often been framed as health promoting, especially for people who experience physical or mental ill-health (Hartig and Staats, 2006; Kaplan, 1995; Ulrich, 1984). One way in which researchers have sought to understand the inter-relationships between people, place and health is through the concept of therapeutic landscapes. First posited by Gesler (1992: 743) the concept focuses on "how the healing process works itself out in places (or situations, locales, settings and milieus)". Since Gesler's (1992) initial work, numerous geographers, particularly those working in the sub-disciplinary field of health, have drawn on his ideas to tease out the therapeutic effects of a wide range of landscapes – from landscapes that are highly individual and unique to those that are more ubiquitous such as built and urban landscape (e.g. Curtis et al, 2013; Masuda and Crabtree, 2010; Williams, 2010). Importantly for this article, significant weight has been attached to understanding the potential healing, or health enhancement effects, of the natural landscape. A growing body of knowledge within both health geography and environmental psychology highlights the positive and restorative effects of being in, or engaging with, the natural environment. Work here, for example, has considered the relational health effects of natural landscapes with varying groups of people ranging from: young adults; older people; those seeking respite; the terminally ill; those in recovery from either mental or physical ill-health; and family care-givers (e.g.Conradson, 2005; Hartig and Staats, 2006; Kaplan, 1995; Milligan et al, 2004; Moore et al, 2013; Ulrich, 1983, 1984; Willis, 2009; Wood et al, 2013). Research in this field points to a range of health promotion and wellbeing benefits from engagement with natural and healing environments including: an increased sense of belonging and purpose (Williams, 2002); the moderation of stress and anxiety (Korpela et al, 2008); increased social interaction and the promotion of social capital (Carpiano, 2006; Cattell et al, 2008); and the instigation of social and environmental interventions designed to promote and support healthy behaviors (Milligan et al, 2004; Milligan et al, 2015). In a review of this broad range of literature, Duff (2012) noted that one of its most salient themes is that there is a need to further understand the social, affective and material resources of enabling places that contribute to the promotion of wellbeing.

53 The therapeutic landscapes literature has also drawn attention to the diverse ways in which
54 different people can experience the same landscapes. Hence, what may prove a therapeutic or
55 salutogenic experience for one individual, can give rise to anxiety, uncertainty or fear in others
56 (Milligan and Bingley, 2007). The emphasis here, however, has been on differences in experiences
57 *between* individuals, highlighting how some places can both 'hurt' and 'heal' at the same time
58 (Wakefield and McMullan, 2005: 300). Willis (2009) also raised the important question of whether
59 the therapeutic landscape is experienced as palliative (i.e. where therapeutic benefits are
60 experienced only when *in* or *on* the landscape but not beyond), or whether there are longer-term
61 healing or health enhancement effects. What is largely absent in the literature then, is an
62 understanding of the temporal dimension of therapeutic landscape effects; that is, how the relational
63 and the therapeutic engagement with landscape can change for the individual at different points in
64 their lives.
65
66 **Stroke and disability**
67 In this article, we address the biographical stories of enabling and disabling aspects of the rural
68 environment by drawing on the specific experiences of stroke survivors living in rural areas in the
69 Netherlands. A stroke is a sudden death of brain cells due to a lack of oxygen, caused by blockage of
70 blood flow, or by rupture of an artery to the brain. Most stroke survivors continue their lives with
71 lasting physical, cognitive and/or emotional impairments which can include paralysis, loss of balance,
72 and coordination, loss of concentration, memory, understanding, speech, and reading and writing
73 skills (BHF, 2014). Such lasting impairments are likely to change the ways in which stroke survivors
74 perceive and engage with their environment.
75 In the Netherlands, 6.1% of people aged 50 and over experience a stroke and survive (CBS,
76 2014); many of these survivors live in rural areas. Following a stroke, most are admitted to an acute
77 stroke unit in hospital. They are then either discharged back to their own home, sent to a specialized
78 stroke rehabilitation unit, or relocated to a nursing home. The place to which they are discharged

depends on the impact of the stroke on the individual, their age and their prospects for recovery. Our study focused on stroke survivors with moderate to severe disabilities who worked on their recovery in a rehabilitation stroke unit before being discharged to their home. Within the rehabilitation stroke unit, survivors work on their recovery with the support of a specialized multi-disciplinary team of physiatrists, physical therapists, occupational therapists, nutritionists, speech therapists, psychologists, social workers, and nursing staff.

When studying disability in rehabilitation medicine, the International Classification of Functioning, Disability and Health (ICF) is widely used, as it provides a coherent view of health from a biological, individual and social perspective (Stucki et al, 2002). Although the ICF stresses environmental and personal factors of health and disability, rehabilitation medicine tends to neglect the spatial and social environment as well as changes over the individual life course (Cott et al, 2007; Jansma et al, 2010). Since the 1990s, the social model of disability has increasingly gained traction. This model places less emphasis on disability as a medical condition and more on exclusionary societal practices that act to disable. First coined by the disabled activist and writer Mike Oliver (1983), the social model has been widely adopted by critical geographers and is the framing of disability we utilize for this paper. Following Chouinard (2010: 242), we define the social model of disability as "the embodied process of becoming disabled through experiences of physical or mental impairment or illness and the negotiation of relations and practices that value able bodies and minds at the expense of others". This approach helps us to look at disability as constructed through societal exclusionary practices.

Biographical disruption and flow

The stroke literature notes how impairments following stroke can impact adversely on an individual's life course, disrupting and inhibiting the continuance of their 'normal' life as experienced prior to the onset of the illness (Cott et al, 2007; Nanninga et al, 2015a). Bury (1982) defined this experience as one of 'biographical disruption'. He maintained that we can learn much about everyday situations

and experiences through analyzing the circumstances in which disruption occurs. His work identifies three key features that underpin biographical disruption. Firstly, he points to disruption of the taken for granted assumptions and behaviors that previously characterized an individual's daily life. Attention here focuses on embodied states not previously brought into consciousness and how these are addressed. Secondly, he identifies a disruption of the individual's biography and their sense of self. Thirdly, he refers to the coping mechanisms mobilized in response to the altered state arising from the disruption. Importantly, biographical disruption is not viewed solely as impacting on the individual experiencing the stroke, but also on families and members of a stroke survivor's wider social networks. In the immediate post-stroke period, survivors are likely to focus on their functional impairments, and on recovering from these. In the longer term, where some impairments prove to be enduring, individuals may identify as being chronically ill and/or disabled (see Cott et al, 2007; Nanninga et al, 2015a).

Despite being widely accepted and having come to form something of a 'grand narrative' of stroke, Faircloth et al (2004) maintain that the concept of biographical disruption may be too simplistic. Where illness is marked by sudden onset – as in stroke – they argue that lives are not *inevitably* disrupted, especially where different symbolic significance may be attached to the experience. So while some individuals may indeed find their lives disrupted as a result of a stroke, others may view having a stroke simply as part of their ongoing life narrative, that is, as a different stage of their life embodiment. In this respect stroke survivors will in maintain a coherent sense of the pre- and post-stroke self. In their critique of the notion of biographical disruption Faircloth et al (2004) draw attention to the intersectionality of stroke with the ageing process, co-morbidity, or pre-existing knowledge of the stroke. They posit that these overlaps may result in what they refer to as 'biographical flow' in the experiences of a person pre- and post-stroke (p. 242). Adding further complexity to the literature is a study of identity changes following stroke undertaken by Kuenemund et al (2016). In this research the authors found evidence of personal growth following the trauma of stroke and argued that it would be worthwhile to also consider positive changes post-stroke.

Whilst we accept the argument that biographical disruption is not inevitable, it nevertheless offers a useful lens through which to interpret and to understand how people experience their pre- and post-stroke body physically, cognitively, and emotionally. The concepts of biographical flow and disruption also highlight the importance of understanding the temporal dimensions surrounding the disabling conditions of a stroke. While much of the argument about disruption and flow is cast in temporal terms, the specific focus of this article is on how the spatial, in all its manifestations, such as place, environment and landscape, enters into the story. Therefore, our paper seeks to expand understandings of how a therapeutic engagement with the rural landscape may change over time for individual stroke survivors.

Understanding rurality in the Dutch context

Our study was conducted in the rural environment of the Northern Netherlands. Our interpretation of rurality draws on Woods' (2012: 3) definition of: "how rural spatial and social relations are constructed, represented, materialized, performed and contested". The rural is a place where aspects of what is commonly regarded as 'natural' in terms of for instance vegetation, animals, rivers, and slopes, are more obviously present. We recognize, of course, that, in most areas these features of rurality are rarely entirely 'natural' but rather are the product of centuries of interventions from factors such as human occupation and agricultural production. In this article, we focus on the 'everyday lives of the rural' which has been identified as one of the key facets of rurality (Halfacree, 2006: 51). The rural setting is appropriate, since it contains a variety of spatial characteristics that, in one way or another, appear to be deepen biographical disruptions or facilitate biographical flows in the lives of stroke survivors.

When studying the potentially therapeutic nature of the rural environment, it is important to acknowledge that what is 'rural' and what the rural landscape looks like differs significantly between different countries. The Netherlands is a largely urbanized country, with very high population densities, averaging 498 people per square kilometer. In comparison, the population density of

157 Belgium is 369; the United Kingdom 265; and Sweden 23 (World Bank, 2013). Even the environment
158 that *is* classified as rural in the Netherlands can be relatively densely populated, with areas being
159 designated as rural if they have an address density of fewer than 500 people per square kilometer[1]
160 (CBS, 2015). Importantly, 99.6 percent of rural dwellers in the Netherlands are still able to reach a
161 first aid post in a hospital within a 30 minute drive and 53.7 percent are able to reach a hospital
162 within a 10 minute drive (RIVM, 2014). This means that even for those areas defined as rural, acute
163 care is never really that far away.

164 However, in a broader context dominated by neoliberal imperatives, health care services
165 (particularly in rural areas) are typically being reduced and concentrated (Chouinard and Crooks,
166 2008; England et al, 2007). In the Dutch context, austerity measures and cutbacks have led to a
167 concentration of health services in areas of higher population density, resulting in the demise of local
168 village-based services (RIVM, 2014; Gijsen and Poos, 2013). In their stead, healthcare providers, such
169 as general practitioners, physiotherapists, dentists, psychologists, social workers, occupational
170 therapists, as well as surgeons undertaking minor operations previously carried out their duties in
171 local hospitals. However, today they are typically concentrated in larger regional centers. Financial
172 cutbacks are also placing pressure on rehabilitation centers to shorten the duration of expensive in-
173 patient rehabilitation services. The focus is on delivering post discharge care and treatment at home,
174 by a specialized team, as early as possible (see, for example, Mas and Inzitari, 2015; Nanninga et al,
175 2015b). Although these services are potentially enabling for rural dwellers who require them, service
176 concentration is based on the premise that rural dwellers can secure access to them (see Goins et al,
177 2005). Understanding how service concentration is impacting on the lives of rural stroke survivors
178 may be an important aspect of their spatial experience post-stroke.
179

[1] the number of addresses within a circle with a one kilometer radius around an address, divided by the surface of the circle (CBS, 2015).

Methodology[2]

This article is part of a larger qualitative study on stroke survivors' experiences of the transition from the rehabilitation unit to the home-setting. Our methodology is informed by approaches to the geographies of disability (Chouinard, 2010; Imrie and Edwards, 2007). That is, we undertook qualitative in-depth interviews designed to give voice to stroke survivors, to understand their experiences over time, and to increase insight into the diversity of their experiences.

The sample of participants for the larger study included stroke survivors living in both urban and rural areas. However, given the neo-liberal imperatives discussed above, we were particularly interested in the experiences of rural dwelling stroke survivors. Hence, in this article, we draw specifically on data collected with those stroke survivors who were living in rural areas in the North of the Netherlands pre-stroke. The data are drawn from semi-structured in-depth interviews with 19 stroke survivors, collected in two separate phases. In the first phase (2010-2011), thirteen participants (1-13, Table 1) were approached as a follow-up after they had completed a survey and indicated they were willing to participate in an in-depth interview. Subsequently, in 2011 and 2012, six participants (14-19, Table 1) were interviewed twice, once in the rehabilitation unit and once at home. Participants were recruited by the third author, who was working as a physiotherapist at the stroke rehabilitation unit at the time. All in-depth interviews were conducted at a time and location that was convenient for the participants, and in the presence of a 'significant other' such as a partner or a sibling. During the interviews, the participants were asked to reflect on their current bodies and (expectations about) their lives in the rehabilitation unit, at home and in the community, and to comment on differences in their daily lives pre- and post-stroke. Overall, the interview guides in both phases covered the same questions; however, our learning experiences and the inductive inferences emerging from the first set of interviews were used to refine the questions in the second set of interviews and opened new paths of inquiry.

[2] This study was part of a previously published larger study. Given the same methodology was used, parts of this section are taken from Nanninga et al (2015a).

All interviewees underwent multidisciplinary treatment in the same rehabilitation stroke unit for at least one month, and all returned home afterwards. Since we recruited participants through the rehabilitation unit, our sample consists of participants who had suffered a moderate to severe stroke, and were relatively young. Older and fragile stroke survivors more often undertake rehabilitation in a nursing home setting, and survivors of a light stroke are typically discharged home following hospital admission.

All participants were informed about the aims of the study, signed a consent form, and participated voluntarily. Following Dutch ethical review processes, the study was submitted to the Medical Ethical Review Committee of the University Medical Center Groningen. It was exempted from review, which means that the Committee did not identify any ethical problems with the research. The in-depth interviews were digitally recorded, transcribed verbatim, coded and analyzed using Atlas-ti, a software package for qualitative data analysis. Coding and analysis were carried out by the first author and reflected on by the second and last authors. In our analysis, we focused on how the social and material components of the rural landscape created different therapeutic encounters pre- and post-stroke, identifying patterns of biographical flow and disruption. Our approach to the data analysis was both deductive and inductive, enhancing the depth of our analysis (see Thornberg, 2012).

Disruption and flow in rural therapeutic landscape experiences

Differences between participants

Participant characteristics are summarized in Table 1. In our analysis we explored patterns of biographical flow and disruption in the stories of different subgroups of participants. Our analysis did not reveal any significant variations in patterns of disruption and flow arising from differing impairments following the stroke; marital; or employment status. Furthermore, while we had anticipated that age might impact significantly on an individual's experience of disruption and flow (e.g. with greater evidence of flow in later life), the data did not support this expectation.

Interestingly, this runs counter to what some of the existing biographical disruption literature tells us. Our data suggest that it is perhaps too simplistic to assume that greater biographical disruption will be experienced at younger age. This is consistent with Faircloth et al's (2005) findings, that narratives of stroke onset can be characterized by both disruption and flow irrespective of age. For example, for working age stroke survivors, biographical disruption may be experienced in relation to employment. At the same time our data reveals that older stroke survivors can also experience significant biographical disruption to their lives, for instance with regard to hobbies or other forms of social engagement.

Furthermore, when looking at time since the onset of a stroke, we found that narratives of disruption dominated the stories of participants who had experienced a stroke more than 24 months prior to the interview. This suggests that disruption is likely to remain dominant within stroke survivors' narratives over time. When considering differences in education, our findings indicated that people with vocational training seemed to cope with the stroke effects relatively well; this may be related to their ability to create practical solutions to everyday problems. Another difference between subgroups was that both married and single men experienced rather more biographical flow than women. For some male participants, this may be linked to their vocational training. We acknowledge that the claims made in the section above are tentative, given the relatively small number of participants.

Table 1: Participant Pseudonyms and Characteristics

No	Name	Age	Stroke effects[a]	Education[b]	Employment status	Marital status	Time since stroke onset (months)[c]	Biographical flow/ disruption[d]
1	John	57	Motor and cognitive	Vocational	Incapacitated	Single	10	D
2	Paul	50	Motor	Unknown	Working	Single	17	F
3[e]	Simon	41	Motor and behavioural, mood, swallowing	Higher	Incapacitated	Single	60	D
4	Tom	60	Motor, cognitive and speech	Vocational	Incapacitated	Married	47	D
5	Caren	60	Motor and cognitive	Higher	Partly incapacitated, partly working	Single	25	D

6	Sam	40	Cognitive, mood, speech, sight and epilepsy	Vocational	Incapacitated	Cohabiting	23	F
7	Nina	47	Motor, cognitive and sight	Vocational	Incapacitated	Married	17	F
8	Violet	42	Motor and cognitive	Lower	Incapacitated	Cohabiting	23	D
9	James	58	Cognitive and behavioural	Vocational	Incapacitated	Married	7	F
10	Victor	71	Motor and speech	Vocational	Pensioner	Married	19	F
11	Rose	53	Motor and cognitive	Vocational	Unemployed	Married	33	D
12	Laura	49	Motor and cognitive	Lower	Pensioner	Married	21	D
13[e]	Isa	48	Motor and cognitive	Vocational	Incapacitated	Single	78	F
14	Kate	61	Motor	Lower	Unemployed	Married	8	F
15	Henry	69	Motor	Higher	Pensioner	Married	6	D
16	Raymond	68	Motor	Higher	Pensioner	Married	6	D
17	Roy	66	Cognitive	Vocational	Pensioner	Single	6	F
18[e]	Peter	46	Motor and behavioural	Vocational	Incapacitated	Married	6	F
19	Ron	63	Motor and cognitive	Higher	Pensioner	Married	6	F

[a] The listed stroke effects were recorded by the rehabilitation clinicians, and these typically coincided with the stories that were discussed during the interviews.

[b] Levels of education: lower - finishing secondary school but no further education; vocational - for example tradesman, care worker; higher - technical college/university educated.

[c] For the participants who were interviewed in round 2, we recorded the time post-stroke at the time of the second interview.

[d] Based on text analysis, we determined whether the story of each participant was dominated by narratives of biographical disruption or flow. This does not mean that participants experiencing flow did not recount any experiences of disruption, and vice versa.

[e] Used to live in a rural area pre-stroke, and moved to an urban area post-stroke.

Disruption and flow in interactions with things and people in rural space

Pre-stroke, most of our participants enjoyed engaging with the rural landscape but gave little thought to either the enabling or the potentially disabling aspects of the environment. Faced with a post-stroke body, however, many noted how elements of the physical environment that had previously been negotiated with ease, were now experienced as disabling. Participants revealed how, rather than engaging with, and enjoying the wider rural landscape (e.g. the natural scenery, wildlife), they now found themselves focusing closely on immediate material objects that had become obstacles to their negotiation of the natural environment. This resulted in experiences of biographical disruption. Victor, for example, explained how he used to enjoy walking or cycling in the rural landscape before his stroke, and had never considered the potential material difficulties involved in moving through this landscape:

> You are never going to be as secure as you were [before the stroke]. I do cycle well, but I have to go through a tunnel at first, and it's very difficult for me to get up [the slope]. So, this hinders me [in going out]. (Victor)

The northern Netherlands is a region that is mostly flat and has no steep hills. Thus, Victor's comment highlights how even relatively minor topographical features can present challenges for the post-stroke body and result in experiences of biographical disruption. A sloping tunnel that facilitated the opening up of the rural landscape in his pre-stroke life, had become a barrier to outdoor activities post-stroke. Sam's experiences revealed another challenge of cycling, namely that of dealing with other traffic participants. Sam ran a nursery garden with his family, and his home and business were located outside a village, in a very quiet rural environment. The quiet traffic situation, together with problems he now experienced with his eyesight, heightened his sense of other traffic participants as 'obstacles':

> At first I would cycle and there would be another cyclist coming my way, and I would not see him coming. And when he would be cycling right next to me, and say "hi", I was scared out of my wits, because I would have missed him completely. And now, with a certain way of observing, my eyes to the left and to the right, it's going well. (Sam)

Sam's narrative reveals how he developed a technique to manage the challenges of bicycling post-stroke, and participating in traffic situations in particular. He took great pride and pleasure in the fact that he could once again take his five-year-old son on bicycle tours through the rural landscape, which strengthened their bond. This demonstrates how material objects and aspects of the environment are connected to the social landscape. Furthermore, Sam's experiences show how he

had developed a technique that enabled him to manage his post-stroke body in a way that demonstrates a shift toward biographical flow.

Physical elements of the seasons can also hinder stroke survivors' engagement with the natural environment. These experiences can illuminate the psycho-emotional dimensions of disability which pertain to internalized oppression and negative stereotypes of disability in society (Reeve, 2002). Laura, for example, expressed frustration that her hemiplegic body left her unable to walk outdoors in the winter time, because bad weather made the landscape slippery to negotiate, resulting in a decline of her physical condition. Even when it was not slippery outside, she had to concentrate on her right leg when walking outdoors:

> When there's no snow, I go out for a walk, to the shopping mall, or to visit my mother. […]. When it is slippery, [my partner] does not allow me to go outdoors. [I'm afraid to fall]. It's not nice, that stupid right side [of my body]. I keep dragging [my right leg]. […] And even when I focus on my right side, when I walk past a wall I stumble into it.
>
> I: Does it become worse when you're tired?
>
> L: That's for sure. (Laura)

For Laura, as well as other participants, the change in their embodied state post-stroke rendered artefacts in the rural environment more challenging and the rural space less accessible. Previously taken-for-granted features of the physical landscape were problematic for the post-stroke body. This changed the nature of their experience and shifted their engagement with the rural landscape from one that focused on enjoyment and engagement, to one that was heavily focused on negotiation and the negative emotions associated with highly circumscribed bodily movement ("that stupid right side").

While not specifically a rural issue, what became clear was that the post-stroke body can find previously accessible landscapes disabling. Material objects such as slopes, walls, and tiles become obstacles to any therapeutic encounter with the landscape. This was especially challenging for our participants since they had not perceived these things to be disabling pre-stroke. This reflects the literature on disabling environments and 'ableist spaces', which illustrates how environments are often designed without taking into account the needs and experiences of people with disabilities (Chouinard, 1997; 2006; Crooks et al, 2008a; Imrie and Edwards, 2007; Rattray, 2013).

When looking at how stroke survivors interact with other people in the rural landscape, our participants revealed how their social needs and abilities had changed. In particular, they noted that they felt a continuous need to belong and to be recognized. How this was achieved tended to differ for participants pre-and post-stroke. Pre-stroke, our participants would engage with other villagers in casual conversation, for instance when meeting them in the street or at the local shops. Post-stroke, participants revealed how they tended to avoid potentially difficult social encounters by engaging with people from a distance. Laura, for instance, noted that she would go out with the specific aim of waving at some family members and friends. It gave her a good feeling to go out with a particular purpose rather than "just walking around aimlessly" as she described it.

> L: [When going for a walk,] there are a couple of places, where I have to check, I have to wave. And, well I walk up until [partner's workplace] and I check whether he's there and I wave at him. Yes, that's nice, but that's not just going for a walk, there's [a social purpose]. (Laura)

By engaging in social interaction from a distance with, in this case, her partner, Laura illustrated how she had developed a strategy that helped her to feel socially included and part of the community, thus achieving a sense of biographical flow. It seemed that for her, as well as for some other participants, direct conversation with other people could be demanding and hence something to be

avoided where possible. This was most evident where oral communication skills and/or information processing abilities were impaired. The social landscape of rural village dwelling, we suggest, can offer a relatively quiet and unthreatening social space, that can provide opportunities for stroke survivors to engage in social interaction from a distance; in doing so it enables them to feel acknowledged and included without the pressure of close physical engagement. These findings reinforce Jones and Curtis' (2010) Australian study on rural-dwelling survivors of a Traumatic Brain Injury (TBI), where the rural, offering a potentially quiet social environment, was found to actually suit participants. These findings reinforce the notion of the rural as an enabling social space (Walsh and O'Shea, 2008), as well afford support to the claim that informal practices in rural communities can help to reduce experiences of social exclusion (Walsh et al, 2014). However, we acknowledge that the rural can also be a space of social exclusion. Parr et al (2004), in her study with people with mental health problems in the UK, for example, noted that the social environment in rural areas can be characterized by both social inclusion and social exclusion. The rural social environment, they maintained, can sometimes be experienced as an unnerving space, which can be difficult to 'navigate' in social terms, and where disabled bodies are stigmatized. Similarly, stroke survivors, can experience social exclusion based on a lack of understanding of their disabling conditions by others in their social environment (Crooks et al, 2008b; Nanninga et al, 2015a).

Disruption and flow in interactions with rural gardens and nature

When looking at participants' relationships with the rural landscape, stories encompassing complexity and change in therapeutic and disabling landscape experiences emerged. In the Netherlands, rural gardens are generally significantly larger than those situated in urban areas, and are one of the reasons why people choose to live in a rural area. Gardens thus form an important part of people's experiences of rural dwelling and green space, and are important to consider in the context of the rural experience of stroke. Many participants spoke of how, pre-stroke, they had enjoyed working in their gardens, but that this had changed. Take Henry's case:

H: I do mow the lawn. We have a sizeable piece of grassland, with these precise little corners that you have to do. The first time I did it [after the stroke], I did it in three turns. […] It's still tiring, but I can do it now. And when I know, I'm going to mow the lawn, I don't do [another exercise]. But it's like, I walk in the garden, and I see all the stuff I'd like to do, but I can't get around to doing it yet. […] It's my balance, when weeding, you have to get down and up again, it's tiring.

P: It's heavy work, gardening. […]

H: I now do less in the garden, my wife is gardening more. (Henry and partner)

As a gardener, Henry experienced the garden in a different way pre-and post-stroke. On the one hand, the things he can still do in his garden, such as mowing the lawn, give him a sense of achievement, so contribute to his experience of the garden as a therapeutic place. On the other hand, his story is illustrative of the frustration people can feel post-stroke, when they want to engage in an activity they used to enjoy, but can no longer do so. This loss of place - in Henry's case his interaction with the flower beds - can affect how participants feel about their garden. His story illustrates how the socio-spatial disruptions experienced by the post-stroke body can change an individual's relationship with those places from which people previously derived therapeutic enjoyment. Such findings run counter to those discussed in Jones and Curtin's (2010) work, where stories of disruption such as recounted by Henry, were largely absent. Rather, participants expressed a strong rural identity and found solace in their attachment to a rural idyll, centered around a peaceful and quiet environment. Importantly, as distinct from our study, Jones and Curtis' (2010) work presented a single 'in the moment' account that did not attend to how the experiences of a stroke survivor may change over time.

Other participants in our study expressed experiences of disruption from a range of other rural landscapes beyond the garden. In the Dutch context, a specific feature of the rural concerns

coasts and lakes. Simon's narrative, for example, revealed a sense of biographical disruption from his favorite activity of sailing. He particularly enjoyed the challenge of curbing the natural environment of the sea. Post-stroke his inability to continue sailing was manifested through a narrative of biographical disruption:

> I don't have any hobbies anymore, everything takes so much energy. And sailing, [my] sailing boat, I sold it. I tried, but I can't do it anymore. It is difficult. And the most difficult thing for me was, the boat was in [sea port on the Waddensea]. And normally we would go to [another port on the Waddensea] to get an ice cream. My sister was here on Saturday, and she took me where I used to live, and I enjoyed that, to the Waddensea. (Simon)

In returning to the sea shore, Simon sought to re-incorporate his therapeutic engagement with the landscape through the sensory rather than the physical experience: watching the width of the sea from the dyke, smelling the seaweed and eating an ice cream in the restaurant on the seafront. Laura, in contrast, sought to re-incorporate a physical and therapeutic engagement with the canals and lakes close to her home, but struggled to achieve this:

> P: [Pre-stroke] we were always outdoors when we were free.
>
> L: Canoeing. […]
>
> P: She says she can't use the paddle anymore. And I tell her, what's the big deal. […]
>
> I: So, you don't enjoy the canoeing when you can't paddle?
>
> L: No, because I wouldn't do my job properly.
>
> P: I don't mind, as far as I'm concerned you could just sit and relax, maybe read a book or something.
>
> L: And if I would have done that before I had the stroke, brought a book. He would have thrown me in the water, figuratively speaking <laughs>. […] You should paddle.

Laura's strong connection to canoeing was a key theme in her narrative. This was expressed both through her dialogue and through her emotions. She indicated that while she wanted to enjoy the therapeutic benefits of canoeing again, she had not come to terms with the alternative 'solution' to participating in this activity. The notion of taking a less active role in the canoe and perhaps reading a book or watching birds while still immersed in the quiet, natural environment was not palatable to Laura. Her narrative reveals that in the absence of being able to undertake the repetitive movements of paddling and engaging in the physicality of canoeing she felt out of control in the natural landscape. A space and an activity undertaken in this space that were previously therapeutic were no longer experienced as such. Whilst not the core focus of our paper,Simon and Laura's stories also highlight the benefits of 'blue space' as therapeutic landscapes in that they may also provide physical and emotional restoration (Korpela et al, 2010; Völker and Kistemann, 2011; 2013).

Nina, who experienced a stroke as a complication with a hip surgery, revealed a more positive narrative. She had struggled for years with a deteriorating ability to walk, especially since hiking used to be a pre-arthritic hip and pre-stroke leisure activity that she and her family vastly enjoyed. Following a hip replacement, Nina managed to regain her pre-stroke and pre-surgery physical condition, enabling her to take up hiking again around the rural living environment proximate to where she lived. She commented on how much this meant for her:

N: Walking is going really well, fantastic. I walk about ten kilometers per day, it's great.

I: You don't know what's happening to you. [laughter]

N: No, really. We say it to each other like ten times on the way, like this is to special, so special.

I: And no limitations?

N: No, really. That's the great thing, because I have not been able to do this for years. My mum lives in the next village, more than four kilometers from here. And now, well the first

> time I did not walk all the way to [my mum's village] of course. And the first time I did walk there, I had to rest on a bench on the way. And now I walk there, just like that. And I even walk back. The first time you had to call like, well I'm there, please come and pick me up. And now I walk back home, that's fantastic. And we go on long walks in the forest, and we go everywhere, it's great. (Nina)

Nina's narrative is one of biographical flow, in which she was able to regain much of her former life following a period of disruption resulting from her hip problems and stroke. After this period of disruption, it might even be argued that she experienced a 'biographical peak'. By this we mean that following a long period of physical disability, Nina's regaining an ability to walk significant distances was experienced as particularly enabling.

Barriers in interacting with rural health care services

As well as being a material, social and natural environment, the rural landscape is also a setting in which stroke survivors have to negotiate and access services, including health care services. Our participants' experiences of accessing and using these services were often framed in terms of barriers which can be interpreted through the notion of biographical disruption. This was, in part, related to issues of transportation. In the case of stroke survivors, this is an important issue in the Netherlands as stroke survivors are, by default, banned from driving for at least six months post-stroke. Given that rural areas are generally not well-serviced by public transport, rural stroke survivors are often dependent on being driven by significant others or reliant on professional taxi drivers to take them to health care services that they are unable to reach by foot, bicycle or mobility scooter. Raymond, for instance, explained how he had become dependent on his wife, since being banned from driving:

R: Well, I used to be much more mobile, I had my driving license. I do still have it, but I am not allowed to drive for another three months. So that makes you dependent on others to drive you around.

P: One other person [laughs].

R: Dependent on your wife [laughs].

Stroke survivors' ability to drive pre-stroke was typically self-evident, meaning our participants were unlikely to have considered this a potential issue when able-bodied. However, the loss of a driving license in combination with the demise of some village-based services, underlined a challenging aspect of the rural environment.

One particular issue that some participants highlighted related to the time it took to get to health care services. James, for instance, had to travel three times a week for outpatient treatment:

On average, I go to [the rehabilitation center] three times a week. […] I typically go on a Monday, Wednesday and Thursday. […]

I: How long does it take you to get there?

J: By taxi, you mean? That's about 45 minutes [one-way].

Whilst transport by taxi would be covered by health insurance, a single journey by taxi to a healthcare service can take up to one hour, as in James' case. Rural dwelling stroke survivors may thus find themselves spending a significant part of their week on travelling to (and engaging in) outpatient treatment.

As well as health care, other services, such as shops and transport were vital for enabling our participants to continue living in a rural area. Some participants realized that they would be unable to regain a sense of biographical flow in a rural setting, and had therefore decided to move away. Peter described how the remote nature of his former rural home had compelled him and his partner

to move to an urban location. Although he had anticipated having to move into town in his later life (i.e. post-retirement), the disabling experiences of the rural landscape post-stroke led him to advance this decision:

> These circumstances have sped up the process of moving [into town]. We used to live in the middle of nowhere [sic] outside the village. There's no public transport in our village, while I am not reliant on [public transport]. There are no shops [in our village], which is also very convenient now [in town]. Overall, this is better. (Peter)

Hence, rather than living in what Peter had come to experience as a disabling environment, he chose to move to an area where he had easier access to shops and services. Peter's decision illustrates how he reorganized his life so that his lived experience was not manifest in biographical disruption, but in biographical flow. Again this narrative runs counter to that of other research on disability and rurality that suggests that the attachment to the rural social and physical landscape, and the desire to preserve a rural identity, outweigh restrictions in terms of access to services such as healthcare, shops and public transport (Jones and Curtis, 2010).

Concluding comments: Towards bio-geographical disruption and flow

Drawing on our work with rural-dwelling stroke survivors, we have explored how the biographical disruption and flow that occurs as a result of stroke impacts on the therapeutic experience of the person-landscape encounter in the Northern Netherlands. In particular, we have highlighted the importance of bringing together the dimensions of time and place in studying disabled people's everyday lives. More specifically, our findings demonstrate how material, social, natural and healthcare environments that have previously been experienced as enabling, easily negotiable and health enhancing may become disabling and non-therapeutic for the post-stroke body (and vice

versa). Furthermore, they show how stroke survivors experience biographical flow in engaging with some natural and social rural places.

Within these narratives of stroke and stroke survival, the spatial relationship between the pre- and post-stroke body and the (rural) environment is crucial. We thus suggest that rather utilizing the terms 'biographical flow' and 'biographical disruption', we should instead engage the notions of 'bio-*geo*-graphical flow' and 'bio-*geo*-graphical disruption'. For us, the inclusion of the -*geo*-graphical perspective, focuses particular attention on the extent to which relational experiences of space/place are disrupted by changes in the life course arising from disability as well as and on how taken for granted embodied states have to be renegotiated at any other place anew. A bio-*geo*-graphical perspective thus has the potential to explain: 1) how the embodied experiences of places that were experienced as therapeutic pre-stroke, are renegotiated and can become ambiguous post-stroke; 2) how stroke survivors actively seek to (re)gain certain abilities that will enable them to access 'lost' and 'new' activities and places. This suggests that whilst some stroke survivors may initially experience bio-*geo*-graphical disruption, there is a determination to return to a position of bio-*geo*-graphical flow, or to create a renewed sense of bio-*geo*-graphical flow.

The concepts of bio-*geo*-graphical disruption and flow are not restricted to either rural areas, or to stroke survivors, since they engage with the interactions between people who become disabled and places over time. At a more general level, the experiences of our disabled participants also illuminate how they sometimes struggled to move and live in spaces that are essentially 'ableist', reinforcing the critical work emerging from within disability geography (Chouinard, 2006). Our findings thus provide a compelling case for re-thinking the medical model which continues to dominate rehabilitation research and practice and instead working to enhance a more embodied and robust social model of disability.

In terms of therapeutic landscapes, we reflected on the limited engagement with the temporal nature of the therapeutic landscape encounter to date. Drawing on the concepts of bio-*geo*-graphical

554 flow and bio-*geo*-graphical disruption, we suggest, provides a framework through which we can
555 begin to understand the importance of time and life-course in shaping landscape experiences. Taking
556 a temporal lens to the experiences of stroke survivors has enabled us to reveal how an individual's
557 construction of a therapeutic landscape can and does, change over time. In the case of rural stroke
558 survivors we have illustrated how the relational engagement with some rural environments can
559 change from being therapeutic and enabling landscapes to ones that are disabling and filled with
560 tension, and vice versa. We also suggest that questions about the palliative or longer-term healing
561 effects of therapeutic landscapes (Willis, 2009) are complex, and need to be understood in relation to
562 individualized experiences and contexts over time. However, the participants' stories also reinforced
563 the importance of understanding the relational nature of therapeutic landscapes (Conradson, 2005),
564 as the individual's relational experience of the physical and social landscape jostle against each other
565 in ways that have the potential to cause a friction that did not occur pre-stroke. Nevertheless, our
566 participants' stories reveal that despite the loss stroke survivors experience on all those domains,
567 they may still experience and gain benefit from the beauty of the rural landscape (see Price et al,
568 2012).

569 Like all research, our study has limitations. Firstly, it did not set out to explore biographical
570 flow and/or disruption and hence our interview themes were not specifically designed to elicit
571 experiences of flow or disruption. Rather, these concepts emerged through our data-analysis.
572 Secondly, we did not attempt to achieve theoretical sampling or data-saturation for subgroups of
573 rural stroke survivors, for example, by age, gender, education and ethnicity, as well as place of
574 residence (urban-rural), place of origin and health status pre-stroke. Hence, we cannot draw
575 definitive conclusions about differences between groups, though as we have indicated, some
576 differences between groups of participants were evident and this warrants further exploration.
577 Thirdly, in this study we were unable to follow up with participants whose stories were dominated by
578 narratives of bio-*geo*-graphical disruption to see if, over time, they may have returned to a narrative
579 of bio-*geo*-graphical flow (or vice versa). This too is deserving of further enquiry. Hence, in relation to

580 the above limitations, we see considerable scope for further research – not just among different
581 subgroups of stroke survivors, but also amongst people experiencing other types of chronic ill-health.
582 Additional research has the potential to increase our understanding of how bio-*geo*-graphical flow
583 and bio-*geo*-graphical disruption may be experienced by different groups of people, in different
584 places with different acquired impairments. Finally, we acknowledge that using in-depth interviews
585 meant that those whose speech and/or language were impaired, and who found it difficult to
586 articulate their stories orally, were underrepresented in our study. Whilst efforts were made to
587 include those who had difficulties expressing their stories through encouraging partners to help, we
588 acknowledge that this strategy has limitations. For future studies, it may be useful to think of
589 adopting visual and/or interactive methods, such as observation, mental mapping, photo elicitation,
590 and walking interviews, to capture the perceptions and practices of people experiencing different
591 impairments. Whilst our methodology enabled us to give voice to our participants, it might also be
592 worth considering the ways in which co-production of this knowledge can be enhanced in the future
593 (see Chouinard, 2010).

594 As we form an interdisciplinary team, comprising geographers, rehabilitation researchers and
595 practitioners, the findings from our study have informed rehabilitation practice. For instance, a
596 coaching program has been established for stroke survivors who have returned home. The purpose
597 of the program is to support the home-making process at places where stroke-survivors wish to
598 (inter)act, such as everyday rural landscapes. Further research is needed to improve the lives of
599 stroke survivors and will contribute to further exploring how re-embodiment for stroke survivors
600 needs to be considered a life long project. This is of particular importance given stroke survivors need
601 to re-engage with both familiar and non-familiar place in rural and urban landscapes. These places
602 contain diverse human and non-human actors that need to be tackled consciously every day anew.
603 Both stroke rehabilitation practice and research appear to have neglected this important aspect of
604 stroke survivors' engagement with the landscape (Cott et al, 2007). Therefore, adding the prefix *geo*

605 to the theoretical repertoire of the biographical disruption literature may help both rehabilitation
606 practitioners and researchers to acknowledge the importance of place in stroke care.
607
608 **References**

609 BHF, 2014. Stroke. Your quick guide. http://www.bhf.org. Accessed 07-04-2016. London, British
610 Heart Foundation.
611 Bury, M., 1982. Chronic illness as biographical disruption. Sociology of Health & Illness 4, 167-182.
612 doi: 10.1111/1467-9566.ep11339939.
613 Carpiano, R.M., 2006. Toward a neighborhood resource-based theory of social capital for health: Can
614 Bourdieu and sociology help? Social Science & Medicine 62, 165-175. doi:
615 10.1016/j.socscimed.2005.05.020.
616 Cattell V., Dines N., Gesler W., Curtis, S., 2008. Mingling, observing, and lingering: everyday public
617 spaces and their implications for well-being and social relations. Health & Place 14, 544-561. doi:
618 10.1016/j.healthplace.2007.10.007.
619 CBS, 2015. Stedelijkheid (van een gebied) [Urbanity (of an area)]. www.cbs.nl. Accessed 29-03-2016.
620 The Hague, Centraal Bureau voor de Statistiek [Central Statistics Bureau].
621 CBS, 2014. Beroerte [Stroke prevalence]. http://statline.cbs.nl/statweb/. Accessed 19-05-2015. The
622 Hague, Centraal Bureau voor de Statistiek [Central Statistics Bureau].
623 Chouinard, V., 2006. On the dialectics of differencing: disabled women, the state and housing issues.
624 Gender, Place & Culture 13, 401-417. doi: 10.1080/09663690600808528.
625 Chouinard, V., 2010. Impairment and disability. In: Brown, T, McLafferty, S., Moon, G. (Eds.), A
626 companion to health and medical geography. Oxford, Wiley-Blackwell (pp. 242-258). doi:
627 10.1111/b.9781405170031.2010.00015.x.
628 Chouinard, V., Crooks, V.A., 2008. Negotiating neoliberal environments in British Columbia and
629 Ontario, Canada: restructuring of state – voluntary sector relations and disability organizations'

630 struggles to survive. Environment and Planning C. Government & Policy 26, 173-190. doi:
631 10.1068/c0502r.
632 Conradson, D., 2005. Landscape, care and the relational self: therapeutic encounters in rural England.
633 Health & Place 11, 337-348. doi: 10.1016/j.healthplace.2005.02.004.
634 Cott, C.A., Wiles, R., Devitt, R., 2007. Continuity, transition and participation: preparing clients for life
635 in the community post-stroke. Disability & Rehabilitation 29, 1566-1574. doi:
636 10.1080/09638280701618588.
637 Crooks, V.A., Dorn, M.L., Wilton, R.D., 2008a. Emerging scholarship in the geographies of disability.
638 Health & Place 14, 883-888. doi: 10.1016/j.healthplace.2007.10.013.
639 Crooks, V.A., Chouinard, V., Wilton, R., 2008b. Understanding, embracing and rejecting: women's
640 negotiations of disability constructions and categorizations after becoming chronically ill. Social
641 Science & Medicine 67, 1837-1846. doi: 10.1016/j.socscimed.2008.07.025.
642 Curtis, S., Gesler, W., Wood, V., Spencer, I., Mason, J., Close, H., Reilly, J., 2013. Compassionate
643 containment? Balancing technical safety and therapy in the design of psychiatric wards. Social
644 Science & Medicine 97, 201-209. doi: 10.1016/j.socscimed.2013.06.015.
645 Duff, C., 2012. Exploring the role of 'enabling places' in promoting recovery from mental illness: a
646 qualitative test of a relational model. Health & Place 18, 1388-1395. doi:
647 10.1016/j.healthplace.2012.07.003.
648 England, K., Eakin, J., Gastaldo, D., McKeever, P., 2007. Neoliberalizing home care: managed
649 competition and restructuring home care in Ontario. In: England, K., Ward, K. (eds.),
650 Neoliberalization. States, networks, peoples. Malden, Blackwell (pp. 169-194). doi:
651 10.1002/9780470712801.ch7.
652 Faircloth, C.A., Boylstein, C., Rittman, M., Gubrium, J., 2005. Constructing the stroke: sudden-onset
653 narratives of stroke survivors. Qualitative Health Research 15, 928-941.
654 doi: 10.1177/1049732305277842.

655 Faircloth, C.A., Boylstein, C., Rittman, M., Young, M.E., Gubrium, J., 2004. Sudden illness and
656 biographical flow in narratives of stroke recovery. Sociology of Health & Illness 26, 242-261. doi:
657 10.1111/j.1467-9566.2004.00388.x.
658 Gesler, W.M., 1992. Therapeutic landscapes: medical issues in light of the new cultural geography.
659 Social Science & Medicine 34, 735-746. doi: 10.1016/0277-9536(92)90360-3.
660 Gijsen, R., Poos, M.J.J.C., 2013. Wat zijn de trends in zorggebruik? [What are the trends in care use?].
661 National Institute for Public Health and the Environment (RIVM), Bilthoven.
662 Goins, R.T., Williams, K.A., Carter, M.W., Spencer, S.M., Solovieva, T., 2005. Perceived barriers to
663 health care access among rural older adults: a qualitative study. The Journal of Rural Health 21, 206-
664 213. doi: 10.1111/j.1748-0361.2005.tb00084.x.
665 Halfacree, K., 2006. Rural space: constructing a three-fold architecture. In: Cloke, P., Marsden, T.,
666 Mooney, P. (eds), Handbook of rural studies. London, Sage (pp. 44-62). doi:
667 10.4135/9781848608016.n4.
668 Hartig, T., Staats, H., 2006. The need for psychological restoration as a determinant of environmental
669 preferences. Journal of Environmental Psychology 26, 215-226. doi: 10.1016/j.jenvp.2006.07.007.
670 Imrie, R., Edwards, C., 2007. The geographies of disability: reflections on the development of a sub-
671 discipline. Geography Compass 1, 623-640. doi: 10.1111/j.1749-8198.2007.00032.x.
672 Jansma, F.I., van Twillert, S., Postema, K., Sanderman, R., Lettinga, A.T., 2010. Physical and
673 rehabilitation medicine and self-management education: A comparative analysis of two approaches.
674 Journal of Rehabilitation Medicine 42(9), 808-814. doi: 10.2340/16501977-0606.
675 Jones, J., Curtin, M., 2010. Traumatic Brain Injury, participation, and rural identity. Qualitative Health
676 Research 20, 942-951. doi: 10.1177/1049732310365501.
677 Kaplan, S., 1995. The restorative benefits of nature: Toward an integrative framework. Journal of
678 Environmental Psychology 15, 169-182. doi: 10.1016/0272-4944(95)90001-2.

679 Korpela, K.M., Ylén, M., Tyrväinen, L., Silvennoinen, H., 2010. Favorite green, waterside and urban
680 environments, restorative experiences and perceived health in Finland. Health Promotion
681 International 25, 200-209. doi: 10.1093/heapro/daq007.
682 Korpela, K.M., Ylén, M., Tyrväinen, L., Silvennoinen, H., 2008. Determinants of restorative
683 experiences in everyday favorite places. Health & Place 14, 636-652. doi:
684 10.1016/j.healthplace.2007.10.008.
685 Kuenemund, A., Zwick, S., Rief, W., Exner, C., 2016. (Re-)defining the self – Enhanced posttraumatic
686 growth and event centrality in stroke survivors: a mixed-method approach and control comparison
687 study. Journal of Health Psychology 21(5), 679–689. doi: 10.1177/1359105314535457.
688 Mas, M.A., Inzitari, M., 2015. A critical review of Early Supported Discharge for stroke patients: from
689 evidence to implementation into practice. International Journal of Stroke 10, 7-12.
690 doi:10.1111/j.1747-4949.2012.00950.x.
691 Masuda, J., Crabtree, A., 2010. Environmental justice in the therapeutic inner city. Health & Place 16,
692 656-665. doi: 10.1016/j.healthplace.2010.02.003.
693 Milligan, C., Bingley, A., 2007. Restorative places or scary spaces? The impact of woodland on the
694 mental well-being of young adults. Health & Place 13, 799-811. doi:
695 10.1016/j.healthplace.2007.01.005.
696 Milligan, C., Gatrell, A., Bingley, A., 2004. 'Cultivating health': therapeutic landscapes and older
697 people in northern England. Social Science & Medicine 58, 1781-1793. doi: 10.1016/S0277-
698 9536(03)00397-6.
699 Milligan, C., Payne, S., Bingley, A., Cockshott, Z., 2015. Place and wellbeing: shedding light on activity
700 interventions for older men. Ageing & Society 35, 129-149. doi: 10.1017/S0144686X13000494.
701 Moore, A., Carter, B., Hunt, A., Sheikh, K., 2013. 'I am closer to this place' - Space, place and notions
702 of home in lived experiences of hospice day care. Health & Place 19, 151-158. doi:
703 10.1016/j.healthplace.2012.11.002.

Nanninga, C.S., Meijering, L., Schönherr, M.C., Postema, K., Lettinga, A.T., 2015a. Place attachment in stroke rehabilitation: a transdisciplinary encounter between cultural geography, environmental psychology and rehabilitation medicine. Disability & Rehabilitation 37(13), 1125-1134. doi:10.3109/09638288.2014.955136.

Nanninga, C.S., Postema, K., Schonherr, M.C., van Twillert, S., Lettinga, A.T., 2015b. Combined clinical and home rehabilitation: a case report of an integrated knowledge-to-action study in a Dutch rehabilitation stroke unit. Physical Therapy 95(4), 558-567. doi: 10.2522/ptj.20130495

Oliver, M., 1983. Social work with disabled people. Basingstoke, Palgrave Macmillan.

Parr, H., Philo, C., Burns, N., 2004. Social geographies of rural mental health: experiencing inclusions and exclusions. Transactions 29, 401-419. doi: 10.1111/j.0020-2754.2004.00138.x.

Price, P., Kinghorn, J., Patrick, R., Cardell, B., 2012. "Still there is beauty": one man's resilient adaptation to stroke. Scandinavian Journal of Occupational Therapy 9, 111-117. doi: 10.3109/11038128.2010.519402.

Rattray, N.A., 2013. Contesting Urban Space and Disability in Highland Ecuador. City & Society 25, 25–46. doi: 10.1111/ciso.12008.

Reeve, D., 2002. Negotiating psycho-emotional dimensions of disability and their influence on identity constructions. Disability & Society 17, 493-508. doi: 10.1080/09687590220148487.

RIVM, 2014. Volksgezondheid Toekomst Verkenning, Nationaal Kompas Volksgezondheid, versie 4.17 [Exploring Future Public Health, National Public Health Compass, version 4.17]. Bilthoven, National Institute for Public Health and the Environment.

Stucki, G., Ewert, T., Cieza, A., 2002. Value and application of the ICF in rehabilitation medicine. Disability & Rehabilitation 24, 932-928. doi: 10.1080/09638280210148594.

Thornberg, R., 2012. Informed grounded theory. Scandinavian Journal of Educational Research 56, 243-259. doi: 10.1080/00313831.2011.581686.

Ulrich, R.S., 1984. View through a window may influence recovery from surgery. Science 224, 420-421. doi: 10.1126/science.6143402.

730 Ulrich, R.S., 1983. Aesthetic and affective response to natural environment. Human Behavior and
731 Environment 6, 85-125. doi: 10.1007/978-1-4613-3539-94.
732 Völker, S., Kistemann, T., 2011. The impact of blue space on human health and well-being -
733 Salutogenetic health effects of inland surface waters: a review. International Journal of Hygiene and
734 Environmental Health 214, 449-460. doi: 10.1016/j.ijheh.2011.05.001.
735 Völker, S., Kistemann, T., 2013. Reprint of: "I'm always entirely happy when I'm here!" Urban blue
736 enhancing human health and well-being in Cologne and Düsseldorf, Germany. Social Science &
737 Medicine 91, 141-152. doi: 10.1016/j.socscimed.2012.09.047.
738 Wakefield, S., McMullan, C., 2005. Healing in places of decline: (re)imagining everyday landscapes in
739 Hamilton, Ontario. Health & Place 11. doi: 10.1016/j.healthplace.2004.05.001.
740 Walsh, K., O'Shea, E., 2008. Responding to rural social care needs: older people empowering
741 themselves, others and their community. Health & Place 14, 795-805. doi:
742 10.1016/j.healthplace.2007.12.006.
743 Walsh, K., O'Shea, E., Scharf, T., Shucksmith, M., 2014. Exploring the impact of informal practices on
744 social exclusion and age-friendliness for older people in rural communities. Journal of Community &
745 Applied Social Psychology 24, 37–49. doi: 10.1002/casp.2176.
746 Wiles, J.L., Allen, R.S., 2010. Embodied ageing in place: what does it mean to grow old? In: Chouinard,
747 V., Hall, E., Wilton, R. (eds), Towards enabling geographies: 'disabled' bodies and minds in society
748 and space (pp. 217-235). Farnham, Ashgate.
749 Williams, A., 2010. Spiritual therapeutic landscapes and healing: A case study of St. Anne de Beaupre,
750 Quebec, Canada. Social Science & Medicine 70, 1633-1640. doi: 10.1016/j.socscimed.2010.01.012.
751 Williams, A., 2002. Changing geographies of care: employing the concept of therapeutic landscapes
752 as a framework in examining home space. Social Science & Medicine 55, 141-154. doi:
753 10.1016/S0277-9536(01)00209-X.
754 Willis, A., 2009. Restoring the self, restoring place: healing through grief in everyday places. Emotion,
755 Space & Society 2, 86-91. doi: 10.1016/j.emospa.2009.09.001.

Wood, V.J., Curtis, S.E., Gesler, W., Spencer, I.H., Close, H.J., Mason, J., Reilly, J.G., 2013. Creating 'therapeutic landscapes' for mental health carers in impatient settings: a dynamic perspective on permeability and inclusivity. Social Science & Medicine 91, 122-129. doi: 10.1016/j.socscimed.2012.09.045.

Woods, M. 2012. New directions in rural studies? Journal of Rural Studies 28, 1-4. doi: 10.1016/j.jrurstud.2011.12.002.

World Bank, 2013. Population density (people per sq.km. of land area). http://data.worldbank.org/indicator/EN.POP.DENST/. Accessed 14-06-2015.