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Constructing the conditions for wellbeing: A qualitative evaluation of group-based ecotherapy for adults living with acquired brain injury

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ABSTRACT

Ecotherapy interventions which promote meaningful engagement with the natural world provide unique wellbeing opportunities for individuals with psychosocial difficulties who may struggle to access nature, while also benefiting the local community and environment. We hereby unpack the experiences of 41 adults living with the psychosocial sequelae of acquired brain injury following their engagement in a group-based eight-to-ten-week sustainable construction intervention delivered in partnership with a local social enterprise called “Down to Earth”. Using reflexive thematic analysis, insights from seven focus groups emphasize the importance of (1) Broadening skills and building for the future in supporting movement towards an engaged and meaningful life; (2) Shared experiences with similar others in facilitating belonging in group memberships; (3) Self-acceptance and identity in cultivating resources for personal growth, and (4) Connecting and contributing, which is critical for community and planetary wellbeing. Opportunities for enhancing local clinical practice are captured within a domain summary theme, and broader implications for “inner” (personal and relational capacities) and global sustainable development are discussed.

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Nature has tremendous capacity to support individual wellbeing, with an array of nature-derived benefits for psychological, physical and social wellbeing firmly recognized (Coventry et al., 2021; Silva et al., 2024). Whilst benefits differ according to the type of environment, i.e., in terms of biodiversity and urbanization (Lovell

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et al., 2014) and the extent of contact itself (Silva et al., 2024), “green spaces” (outdoor public spaces occupied by vegetation) can reduce psychological and physiological arousal following stress (Meredith et al., 2020) and significantly improve positive affect, and to a lesser extent, reduce negative affect (McMahan & Estes, 2015). Local evidence from a recent longitudinal evaluation of population data in Wales has reported that greater levels of green space around one’s home is associated with a reduced likelihood of subsequent common mental disorders, and an even lower likelihood of experiencing mental health difficulties in those with a history of mental health disorder (Geary, Thompson, Mizen, et al., 2023). Similar population-based research from the same group has reported that spending time in nature (four hours per week vs. none) is associated with higher well-being for residents of Wales (Garrett et al., 2023), as is use of green and blue space (outdoor bodies of water) for leisure (Geary, Thompson, Garrett, et al., 2023).

Green spaces are purported to be health protective because of their restorative properties, with leading theories implicating the role of restoration and stress reduction on psychological and physiological systems (Kaplan, 1995; Kaplan & Kaplan, 1989; Ulrich et al., 1991). Wellbeing benefits extend to clinical populations (Berman et al., 2012), older adults with long-term health conditions and those with existing mental health difficulties (Coventry et al., 2021; White et al., 2019). Notably, population-based research from Wales suggests that individuals living in areas of social deprivation may reap the most benefit from time spent outdoors, with the association between nature exposure and wellbeing moderated by household-level deprivation. In such contexts, time spent in nature may mitigate and/or prevent mental health problems in those who experience material deprivation. However, marked inequalities exist regarding access to high-quality green spaces, with people living in deprived areas and those with longstanding health conditions or functional limitations experiencing reduced accessibility (Geary, Thompson, Mizen, et al., 2023; Mitchell & Popham, 2008; van den Berg et al., 2015). Socioeconomic status and (dis)ability hereby operate as forms of sociocultural discourse which shape how individuals access and engage with natural environments (Wijaya Mulya et al., 2025). This is an example of how environmental factors, including the physical surroundings and broader social and attitudinal context within which an individual lives, can influence experiences of health, disability and participation. This is reflected in key international frameworks such as the World Health Organisation’s International Classification of Functioning, Disability and Health (ICF) and is particularly relevant in the context of acquired brain injury (ABI): a prevalent neurological condition which, as indicated by UK-based research, is more common among individuals from deprived areas (Dunn et al., 2003).

Individuals with ABI experience wide-ranging and often pervasive effects across physical, emotional, cognitive and social domains (Milders et al., 2003), contributing to profound levels of psychological distress (Ayerbe et al., 2014; Glenn et al., 2001; Hackett et al., 2005; Jorge et al., 2004). Relative to physical

disabilities, the persistent cognitive and behavioural sequelae of ABI often create the biggest barrier to psychosocial adjustment, in addition to social, community and vocational reintegration (Lefebvre et al., 2008; Milders et al., 2003). Return to work and leisure is often difficult, with up to 60% of survivors facing personal and activity-related barriers to employment (Donker-Cools et al., 2016; van Velzen et al., 2009) and many facing barriers to community integration even after 10+ years post-injury (Lefebvre et al., 2008; Morton & Wehman, 1995). This means that opportunities for engagement, achievement, meaning and purpose are limited – with these experiences being closely connected to one's experience of psychological wellbeing (Schueller & Seligman, 2010). Meaning, for example, constitutes a sense of connectedness to a greater whole (Seligman, 2002) and comprises the web of connections and understandings that facilitate comprehension of one's lived experience (Steger, 2012). This becomes particularly important after brain injury, as individuals work to make sense of their new realities and rebuild identity and purpose amid disrupted roles, routines, and relationships (Gracey et al., 2008, 2009).

Positively, experiences in the natural environment can comprise an important source of meaning for adults of all ages (O'Connor & Chamberlain, 1996; Reker & Woo, 2011), including clinical populations (Berger & McLeod, 2006; Granerud & Eriksson, 2014), with green spaces facilitating opportunities for social interaction and cohesion (Wan et al., 2021) and positive health behaviours (Jennings & Bamkole, 2019). This extends to people with ABI, with qualitative evaluations suggesting that surfing can provide the context for adults living with ABI to experience positive emotions, meaning and purpose, while cultivating feelings of trust, safety, acceptance and community through social connection, further to providing foundations for sustained positive change (Gibbs, Wilkie, et al., 2022; Wilkie et al., 2021). Facilitating multiple components of wellbeing in this way promotes balance and boosts subjective wellbeing, which is contingent on meeting survival and growth needs (Sirgy & Wu, 2009). Notably, intentional interaction with nature may provide adults living with ABI with engaging opportunities to experience key components of wellbeing and personal growth – including a sense of autonomy, self-efficacy, community and social cohesion – that can be difficult to achieve through conventional rehabilitation in hospital settings (Vibholm et al., 2024). Although research exploring the therapeutic potential of nature for people living with ABI is still in its infancy, a newly published systematic scoping review provides promising evidence in support of this approach. Norwood et al. (2025) report that intentional interaction with natural environments during inpatient and outpatient rehabilitation has been found to improve overall wellbeing, mood, depression, anxiety and quality of life in adults with ABI, with qualitative findings emphasizing the restorative potential of nature and its broader contribution to the rehabilitation process. This illustrates how the Holistic Model of Neurorehabilitation (Ben-Yishay & Diller, 2011; Ben-Yishay & Prigatano, 1990), which advocates for the

whole consideration of every aspect of a person's functioning, may be strengthened by immersing individuals within their local natural environments: to which some adults living with ABI explicitly report feeling "more connected" following group-based structured intervention (Gibbs, Wilkie, et al., 2022).

The extent to which one is cognitively, affectively and experientially connected to nature is a prerequisite for individual health outcomes; affecting the breadth and magnitude of wellbeing benefits obtained through spending time in the natural environment (Capaldi et al., 2014). While recent discursive scholarship has drawn attention to how nature connectedness and nature-derived wellbeing benefits are culturally mediated and shaped by socio-political context (Wijaya Mulya et al., 2025), those who are more closely connected to nature typically experience more vitality, positive affect and life satisfaction (Capaldi et al., 2014); with nature connectedness increasing one's sense of meaning and autonomy (Keyes & Annas, 2009). Robust epidemiological studies have shown a strong association between meaning and purpose in life and reduced mortality (Alimujiang et al., 2019), with research to suggest that the perception of a worthwhile life may have a greater impact on wellbeing than socioeconomic status itself (Martin et al., 2020). Yet, global evidence indicates that disconnect and psychological detachment from our natural surroundings is growing (Capaldi et al., 2015), with its beneficial effects often underappreciated (Nisbet & Zelenski, 2011). Given that nature connectedness and the degree to which people associate and identify with nature is linked to environmental concern (Schultz et al., 2004) and engagement in pro-environmental and pro-nature conservation behaviours (Mackay & Schmitt, 2019; Martin et al., 2020; Richardson, Passmore, et al., 2020), this has important implications for planetary wellbeing, which is in a state of increasing crisis (Mead et al., 2023).

The wellbeing of people and the planet are significantly intertwined, and actions to support individual and collective wellbeing can often be aligned with those required for planetary health and wellbeing (Isham et al., 2023; Mead et al., 2023; Robinson & Breed, 2019). This is in keeping with recent multi-dimensional definitions of planetary wellbeing as the highest attainable standard of wellbeing for all of earth's inhabitants and its natural and social systems (Antó et al., 2021). Improving the human-nature relationship comprises one pathway through which we can care for ourselves and the planet (Brymer et al., 2019), with findings from a meta-analysis of correlational and experimental studies asserting nature connection as a promising avenue for promoting pro-environmental behaviours with applicability across diverse populations (Mackay & Schmitt, 2019). Simple everyday activities and those which facilitate a sense of meaning, emotional attachment and a compassionate relationship with nature (i.e., through purposeful engagement) may strengthen nature connectedness over and above superficial contact (Lumber et al., 2017; Richardson, Dobson, et al., 2020; Richardson, Passmore, et al., 2020). This, coupled with a deep sense of immersion in nature, may provide opportunities for autonomy

and freedom to be one's authentic self: contributing to personal growth, enhanced self-esteem and self-regulation, and improved social competency (Norton & Watt, 2014; Passarelli et al., 2010; Ray & Jakubec, 2014). Practices such as "forest bathing" for example have been shown to induce transcendent emotions such as awe, gratitude and selflessness, as reported by an empirical review (Hansen et al., 2017). These experiential and relational processes help cultivate inner capacities such as self-awareness, perspective-taking, connectedness and care that align with the Inner Development Goals (IDGs; <https://www.innerdevelopmentgoals.org/>), a framework increasingly recognized as critical for enabling progress toward the UN Sustainable Development Goals (SDGs; <https://sdgs.un.org/>). In this way, nature-based interventions which intentionally foster these inner capacities while strengthening one's sense of belonging to both human and ecological communities help to build capacities for subjective, societal and planetary wellbeing (Mead et al., 2023). Ecotherapy is one such intervention which explicitly aims to cultivate ecological consciousness while promoting inner development through purposeful psychotherapeutic activities (Jordan & Hinds, 2017). Typically defined by this intentional therapeutic framing, eco-therapeutic activities vary from hiking, adventure and wilderness therapy, to bushcraft and horticultural activities, to mindfulness practice in nature and nature-based art and creative activities (Isham et al., 2025; Wijaya Mulya et al., 2025). Some may also include activities which support individuals to engage with and preserve natural environments, such as structured conservation and sustainable construction projects.

Engagement in conservation activities may present valued opportunities for achievement, pleasure and social contact, with qualitative research findings documenting subjective improvements in health and wellbeing in adult members of the general population who experience social isolation and poor psychological wellbeing (Lovell et al., 2015). Similar outcomes have been echoed in more recent research which has highlighted the potential for group-based sustainable construction projects to lead to statistically and clinically significant mental health and social benefits in marginalized and hard-to-reach groups (Davies et al., 2020); with individuals who have needs in these areas demonstrating positive changes in self-reported levels of anxiety and depression, further to increased resilience and greater social connectedness. Overall, a recent review of the literature suggests that structured nature-based activities are perceived to provide opportunities for the strengthening of social support networks, personal growth and skill acquisition in the general population (Silva et al., 2024). These opportunities are particularly important in the context of individuals living with ABI and pervasive impairment due to difficulties returning to work and participating in hobbies (van Velzen et al., 2009), resulting in diminished opportunities for meaning, social connectedness and a sense of belonging (Fisher et al., 2022). Nature-based interventions which support the human-nature connection may thus provide a range of leverage points to facilitate

individual wellbeing in those living with such difficulties, yet they remain relatively under-utilized within the healthcare sector (Capaldi et al., 2015).

Despite well-documented nature-derived benefits for physical and psychological wellbeing (Taylor et al., 2022), and emerging evidence documenting reductions in illbeing and improvements in general wellbeing that may aid rehabilitative processes in those with ABI (Norwood et al., 2025), there remains limited exploration of how nature-based activities might foster broader experiences of meaning, belonging, and social participation in this population. This is particularly important for individuals with ABI, who typically face psychological, social and structural disadvantage, and may benefit considerably from inclusive nature-based interventions (Coventry et al., 2021; Geary, Thompson, Mizen, et al., 2023). A recent narrative review concluded that nature-based interventions targeted at socioeconomically deprived communities can generate meaningful health and social benefits in addition to economic and environmental outcomes (Harrison et al., 2023). Yet, much of the clinical literature continues to frame nature primarily as a passive resource for therapeutic extraction, rather than recognizing the potential for reciprocal benefit. Such a framing risks overlooking how nature-based interventions might promote wellbeing outcomes that extend beyond the individual – supporting not only personal recovery but also contributing to community and planetary wellbeing through the cultivation of care, compassion and connectedness to human and non-human life (Blackburn et al., 2025; Robinson & Breed, 2019). Accordingly, the aim of the present evaluation is to unpack the experiences of individuals living with ABI following engagement in a group-based ecotherapy programme which merges meaning making with sustainability-focused practices, offering insight into how such interventions may support more holistic, socially and ecologically attuned models of neurorehabilitation.

Methods

Design

Employing a qualitative evaluation design, this work draws on reflexive thematic analysis to critically unpack focus group data collected by a Community Neurorehabilitation Service (CNS) in South Wales, United Kingdom, as part of routine service improvement efforts. The work serves to retrospectively evaluate the potential of this group, nature-based ecotherapy intervention to support holistic wellbeing in adults living with ABI.

Participants

All individuals were receiving multidisciplinary neurorehabilitation from the CNS in South Wales, United Kingdom. As per the eligibility criteria for the

service, all had a confirmed diagnosis of ABI, were aged 18 years or older, and lived in the community and catchment area of the health board. In addition, they had active rehabilitation goals and were able to engage in active rehabilitation. This service works with individuals who have experienced ABI, including moderate and severe Traumatic Brain Injury, Hypoxic Brain Injury, Subarachnoid Haemorrhage, Encephalitis and people living with stroke who wish to return to employment. The service model is centred around the Holistic Model of Neurorehabilitation (Ben-Yishay, 1996, 2000; Ben-Yishay & Prigatano, 1990; Prigatano, 1999), with both individual and group-based therapies being offered to help patients achieve their rehabilitation goals. Service users were invited to attend the Down to Earth intervention if the clinical team felt (a) it would help them progress towards their wider rehabilitation goals and facilitate meaningful opportunities for community engagement post-discharge, (b) they were able to engage with the activities safely and meaningfully, and (c) they could provide informed consent. Exclusion criteria included not being able to provide informed consent, having receptive or expressive language difficulties or low memory function that could preclude meaningful engagement, having behavioural difficulties that could potentially disrupt other group members (as determined by their clinician), or other medical or psycho-social reasons (based on risk assessment by the referring clinician). Service users were able to attend the intervention multiple times over the course of their rehabilitation. This evaluation reports on insights shared by 41 individuals who consented to share their experiences, inclusive of three individuals who completed the Down to Earth programme twice, and one individual who completed it thrice. An overview of the characteristics of those who consented to engage in the service evaluation is presented in Table 1 below.

Ethical considerations

This work draws on pre-existing qualitative service evaluation data collected as part of routine neurorehabilitation offered to eligible individuals who consented

Table 1. Participant characteristics.

Age	Mean = 42.4; Standard Deviation 10.65; Age range (18–60 years); Median = 40
Sex	Male = 29; Female = 12
Type of Brain Injury	Traumatic Brain Injury <i>n</i> = 25; Traumatic Brain Injury with Epilepsy <i>n</i> = 3; Acquired Brain Injury <i>n</i> = 13
Time Since Injury	Mean = 56 months (4.66 years); Range (6 months – 33 years)
Employment Status	Employed <i>n</i> = 4; Retired due to ill-health <i>n</i> = 1; Unemployed <i>n</i> = 36.
Living Arrangements	Living alone <i>n</i> = 20; Living with partner/family <i>n</i> = 21.

Note: This table presents demographic information for participants (*n* = 41) at the time of their initial engagement in the intervention. Of these, three individuals completed the intervention and corresponding focus group session twice (consecutively), and one individual completed it thrice within one year. Living and employment circumstances remained stable for three of these participants, while one participant moved from living alone to taking early retirement and living with family part-time.

to share feedback on their experiences with the aim of improving service provision and informing theoretical development. While evaluations of service user experience following healthcare interventions are not automatically exempt from ethical review, the Health Research Authority (HRA) Decision Tool confirmed that this evaluation fell under the category of service evaluation rather than research. This classification was independently verified by the NHS Research & Development (R&D) department affiliated with the CNS, who reviewed the work presented and confirmed that it met the criteria for service evaluation. As such, NHS Research Ethics Committee (REC) approval was not required. This was because participants were not randomized into different groups: the intervention was part of routine care, and participants self-selected based on perceived benefit. Additionally, “treatment as usual” was not altered, with participants continuing to receive standard care (holistic rehabilitation delivered by an interdisciplinary team) alongside the intervention. Participants were made aware of their right to withdraw at any time, and transcripts were de-identified to protect the anonymity of those involved. All participants informally indicated that they valued the opportunity to share their experiences to support service development, recognizing their contribution to the ongoing improvement of a theoretically informed improvement-driven service that aims to broaden the scope of neurorehabilitation to actively promote long-term wellbeing and flourishing. This practice ensures that rehabilitation approaches remain responsive to patient needs and prevents the inefficient allocation of resources to ineffective treatments while fostering co-created, patient-informed care.

Intervention

As part of their ongoing treatment and rehabilitation, service users were invited (via mail) to attend an eight-to-ten-week nature-based intervention delivered in partnership with “Down to Earth” (downtoearthproject.org.uk). This not-for-profit social enterprise provides accessible, inclusive, and meaningful outdoor experiences for vulnerable and highly marginalized populations such as health board patients with chronic conditions; with this being inclusive of adults living with ABI. Outdoor experiences hereby include community construction projects which merge traditional and sustainable construction to create permanent sustainable learning spaces, eco-restorative social housing, and accommodation for vulnerable populations. The purpose of the enterprise is to support positive change in individuals while providing opportunities for the building of diverse skills for four hours per week at one of two sites within the Gower Peninsula of South West Wales: “Murton” and “Little Bryn Gwyn”. The Murton site is a four-acre smallholding which showcases various buildings made using cob (earth), strawbale, timber, thatch, and green roof systems; demonstrating how traditional and sustainable construction

technologies can be used in conjunction with each other. The Little Bryn Gwyn site is six acres in size and is the primary site hosting construction-based activities; showcasing round pole timber frame and reciprocal roof sustainable construction methods. Buildings here are constructed with the skilled support of the Down to Earth construction team using natural and locally sourced materials.

Participants were able to engage in a range of outdoor activities with the support of two members of the Down to Earth team and two members of staff from the Community Brain Injury Service. Down to Earth staff provided specialist knowledge of their activities (namely sustainable land and woodland management tasks and adventure activity) and the Community Brain Injury Service staff (professionals working within the discipline of clinical psychology, occupational therapy or speech and language therapy) provided knowledge of brain injury and the clinical skills needed to help patients work towards their individual rehabilitation goals (i.e., to return to work or feel more integrated into their communities), which is in-keeping with the Holistic Model of Neurorehabilitation (Ben-Yishay, 1996, 2000; Ben-Yishay & Prigatano, 1990; Prigatano, 1999). Each intervention comprised of elements of building, conservation, woodwork, and/or outdoor activities, but the precise content of the group and emphasis on each component differed slightly as a function of the needs and physical abilities of the group (informed by appropriate risk assessment) and the initiatives that Down to Earth were involved at the time.

The nature of available projects was explained to each cohort at the start of the intervention and activity options were presented based on the bespoke collective needs of all group members. From this information, a programme for the intervention was co-constructed and this was reviewed throughout its duration to ensure that activities were meeting group needs. Thus, the choice of activity was determined somewhat by participant needs and preferences, which is in-keeping with a participatory approach to rehabilitation and patient-centred approach to care. Tasks were conducted in small groups, and group activities (such as river walking, shelter building, mallet making, fire lighting, organic horticulture, outdoor cooking and sustainable land management tasks) were used to bring service users together. Participants were encouraged to pace themselves while completing activities and could take breaks when needed.

Data collection

All participants who attended the Down to Earth intervention were invited to share their feedback and experiences of engaging in the intervention to inform service development. This was organized during the intervention period and required service users to sign a consent form. Through convenience sampling, seven face-to-face focus group discussions were conducted with a total of 41 individual participants, with groups spanning from March 2014 to

April 2020. This quantity of focus groups is consistent with the recommended range for achieving saturation of meaning (namely, depth and understanding of phenomena), particularly in instances where conceptual codes are likely to be generated to capture nuance and complexity (Hennink et al., 2019). Face-to-face focus group discussions were chosen as the method of data collection because they build on group dynamics (Nyumba et al., 2018) and allow for organic social interactions to occur; potentially allowing for more “naturalistic” accounts of experience to be shared than those achieved via individual interview (Wellings et al., 2000). Moreover, this method of gaining feedback may be more appealing for groups for whom individual participation may be daunting, providing an open and potentially empowering environment within which meaning making can be explored (Braun & Clarke, 2013). This is consistent with national requirements for evaluating services and patient experience and aligns with a participatory approach to healthcare services and applied research, in line with previously published work in the field (Tulip et al., 2020; Wilkie et al., 2021). Individual interviews were offered if participants couldn’t attend the focus groups, however, no participants opted for this method of sharing their insights.

The size of the focus groups varied from five to nine participants; consistent with recommended practice for conservation-based research, wherein smaller groups are considered to generate depth of discussion while also being easier for moderator(s) to manage (Nyumba et al., 2018). Focus groups were moderated by a clinical team member or by a member of staff at Down to Earth (or both, in some instances) and were thus known to the participants. While this approach helped create a familiar and supportive environment, it is possible that this familiarity could have introduced social desirability bias, potentially limiting the expression of critical or negative views. To mitigate this, participants were reminded that all feedback, whether positive, negative, or neutral, was welcomed and would help shape service development. Open-ended questions were used throughout, and where positive experiences were shared, follow-up prompts encouraged the exploration of alternative or contrasting perspectives.

Focus groups were held at the respective site at Down to Earth and conducted immediately after participants completed the intervention, except for one focus group (Little Bryn Gwyn, September 2015) which was conducted at four weeks and facilitated by a member of staff at Down to Earth, and one focus group (Murton, December 2019) which was conducted on the last morning of an eight-week intervention by a trainee Clinical Psychologist. The early hosting of these groups was necessary to (a) accommodate for time resource constraints and reflects a practical difficulty of conducting service evaluation work within a clinical context, and (b) generate timely feedback to inform service delivery. However, given that spending 120 min in nature per week is associated with positive self-reported health and wellbeing gains

(White et al., 2019), the use of data generated prior to intervention completion was considered acceptable. Table 2 provides a detailed overview of the focus groups based on the intervention attended, including the duration, location and size, in addition to key contextual details relating to the focus group discussions, including group size and demographic characteristics in addition to describing the focus group moderator.

As focus groups were conducted on service evaluation basis, questions centred upon salient aspects of the course and practical points for improvement (in terms of timing, group size, and managing difficulties such as fatigue). Notwithstanding, participants were encouraged to reflect on what they felt that they took away from the intervention, with questions revolving around the nature of the activities themselves, the environment, and how engaging in the activities made them feel. Questions posed to the group were open-ended and developed iteratively over the course of the discussion in response to topics raised by participants. The moderator used prompts to stimulate group discussion and paraphrasing to clarify understanding and create opportunities for other members to agree or disagree with the points raised. The flow of the discussion was directed by the moderator, but driven by participants, such that the moderator took a more peripheral role allowing the group to discuss points which they considered to be meaningful. A semi-structured topic guide was created following ZF's moderation of the first three focus groups to ensure consistent coverage of topics across all subsequent groups. The topic guide underwent continuous refinement over the six-year evaluation period, with questions becoming more focussed on skill building and attitudes concerning sustainable practices as interest and understanding of the concepts grew (see supplementary materials for the finalized topic guide). Focus groups lasted no more than one hour in duration and were audio recorded with the consent of participants. These were then transcribed by a clinical team member, with each textual transcript capturing auditory emotional expressions and behaviours (i.e., laughter and clapping) which were combined with behavioural notes recorded by the moderator(s) (i.e., nods of agreement to indicate consensus). This contextual information was included to aid understanding of the emotional dynamics of the group during review. Anonymised textual transcripts were stored on a secure shared drive within the health board and password protected. Audio recordings were deleted to ensure participant anonymity. Data triangulation (i.e., member checking) was not sought owing to it being collected on a service evaluation basis.

Data analysis

Reflexive thematic analysis was used to critically unpack participants' experiences of the Down to Earth intervention according to a critical realist perspective (Archer et al., 2013). This approach allowed for a nuanced interpretation and

Table 2. Intervention overview and focus group details/demographics.

Intervention details			Focus group details			Focus group demographics		
Location	Duration	Group size	Date	Size (% of group)	Moderator	Employment status	Sex assigned at birth	Age range
Murton	8 sessions	9	March 2014	7 (≈78%)	Clinical Psychologist and Community Neurorehabilitation Services Lead (Author ZF)	All unemployed	Majority male cohort (n = 6/7) ≈ 86%	27–58 years old
Murton	8 sessions	10	November 2014	9 (90%)	Clinical Psychologist and Community Neurorehabilitation Services Lead (Author ZF) and Down to Earth Staff Member (female)	Majority unemployed (n = 7) ≈ 78%	Majority female cohort (n = 5) ≈ 56%	26–54 years old
Little Bryn Gwyn	8 sessions	11	February 2015	5 (≈45%)	Clinical Psychologist and Community Neurorehabilitation Services Lead (Author ZF)	All unemployed	Majority male cohort (n = 4) ≈ 80%	28–57 years old
Little Bryn Gwyn	8 sessions (focus group held after 4)	10	September 2015	8 (80%)	Down to Earth Staff Member (female)	Majority unemployed (n = 7) ≈ 88%	Majority male cohort (n = 5) ≈ 63%	30–60 years old
Little Bryn Gwyn	10 sessions	8	November 2015	5 (≈62%)	Clinical Psychologist and Community Neurorehabilitation Services Lead (Author ZF)	All unemployed	Majority male cohort (n = 4) ≈ 80%	30–55 years old
Murton	9 sessions	10	March 2017	5 (50%)	Clinical Psychologist and Community Neurorehabilitation Services Lead (Author ZF)	All unemployed	Majority male cohort (n = 3) ≈ 60%	18–47 years old
Murton	8 sessions (focus group held on morning of final session)	10	December 2019	7 (70%)	Trainee Clinical Psychologist (male)	Majority unemployed (n = 5) ≈ 71%	All male cohort	32–57 years old

evaluation of its potential to foster wellbeing across multiple levels of scale by collating patterns of meaning across the groups (Braun & Clarke, 2006, 2013). The analysis was conducted by the first author (KG): a female early career outside researcher and PhD candidate with clinical experience of working with adults with neurological conditions (including ABI) and experience of using qualitative methodologies to evaluate initiatives delivered by local health boards across Wales, including community-based interventions delivered by the CNS in question. KG has a keen interest in the health and wellbeing benefits associated with nature and, despite facing some access difficulties, has a strong affinity for nature and spends much leisure time visiting green and blue spaces. KG is part of a wider research group led by the corresponding authors (ZF; a female Consultant Clinical Psychologist who is the lead of the service in question, and AK; a male Professor of Psychology) who have collaboratively steered the development of a transtheoretical (GENIAL) model which imposes an interpretive framework on the disparate theory and literature of wellbeing science to highlight pathways through which wellbeing may be realized (Mead et al., 2021). The first author's knowledge base is grounded within this theoretical background and their work is part of a wider initiative focused on building a culture of care in the healthcare sector (Gibbs, Fisher, & Kemp, 2022). Accordingly, coding was largely deductive, drawing on the GENIAL framework as a lens through which participants' experiences could be contextualized in accordance with relevant scientific theory and evidence. However, KG remained open to novel insights and employed inductive coding to reduce the risk of producing an impoverished analysis with narrow interpretations. This blended approach is in keeping with the notion that producing knowledge based on understanding (which embodies a hermeneutics of "empathy") can be complementary to that produced to explain (which embodies a hermeneutics of "suspicion") as neither may generate sufficient insight in isolation (Willig, 2017).

The analytic process began with a thorough familiarization phase, which involved reading of the dataset while simultaneously cleaning transcripts to ensure consistency in grammar and formatting. This step was essential, as multiple Assistant Psychologists and support staff employed by the Community Neurorehabilitation Service had transcribed the focus group discussions over the data collection period, resulting in inconsistencies in transcription style (e.g., variations in orthographic detail and presentation). To enhance coherence and readability, the author standardized the transcripts by removing orthographic markers. Given the large dataset and the communicative impairments associated with ABI, it was felt that retaining such details could detract from textual clarity and accessibility of the data. Moreover, as many transcripts lacked these features to begin with, their selective inclusion risked further inconsistency in the dataset. Cleaned text documents were uploaded to a digital qualitative analysis software platform (Atlas.ti), which was used to

support the analysis due to its ability to organize and securely store large units of digital text data.

Provisionally interesting insights were coded, with codes being both semantic and latent (capturing explicit and underlying meanings of the data), and concrete and conceptual (capturing both the specific content/words used in addition to abstract concepts guided by the researcher's knowledge and interpretation). Examples of codes include "meaning," "skill building," "challenge," and "acceptance of self." Over the course of several weeks, codes were merged, renamed, and condensed throughout the analytic process, with provisional themes being gradually generated according to the author's categorization of the data. These themes were iteratively developed and refined to capture shared meaning across the data units whilst also remaining open to complexity and nuance. Candidate themes were shared and discussed with senior authors (ZF and AK), whose clinical expertise provided valuable insights that helped to clarify the distinctiveness of each theme and ensured that selected quotes aligned with the contextual clinical narrative that they were embedded in. Theme naming of themes and their contextual narrative underwent multiple cycles of refinement by the first author, with the analytic framework and overarching narrative evolving over several months. This iterative process aimed to construct a compelling interpretation and evaluation of the Down to Earth programme that captured both nuance and complexity. Each major iteration of the analysis was reviewed by the senior authors, reinforcing the theoretical and clinical robustness of the results. Following the completion of a mature draft of the manuscript, was then shared with the Research Lead employed by Down to Earth (co-author KD) for feedback. This engagement fostered a reciprocal exchange of knowledge, ensuring that the qualitative findings were not only theoretically robust but also practically meaningful and accessible to a practitioner unfamiliar with the GENIAL framework. The Research Lead highlighted key insights and identified areas requiring further clarification, prompting refinements to enhance clarity and specificity. This reinforces the value of co-produced knowledge in shaping and optimizing future nature-based interventions and exemplifies the potential of partnership working to bridge evidence and practice in ways that can meaningfully inform service delivery and enhance participant outcomes.

Results and discussion

Participants ($n = 41$) were adults aged between 18–60 years old. The majority were male ($n = 29$) and most were unemployed at the time of participation ($n = 36$), reflecting the significant impact of brain injury on sustained engagement in work (Donker-Cools et al., 2016; van Velzen et al., 2009). Time since injury varied from six months to 33 years, reflecting the service's inclusive approach to supporting individuals at different stages of adjustment and rebuilding.

Rather than limiting participation to those in the acute or early phases post-injury, the intervention aimed to provide meaningful engagement, social connection, and access to green space for individuals who may face ongoing barriers to participation and wellbeing, regardless of how long ago their injury occurred. Although specific demographic data on ethnicity or cultural background were not collected, the sample was composed predominantly of White British adults, broadly reflecting the demographic profile of the population served by the local health board. Living arrangements were mixed, with roughly equal numbers living alone ($n = 20$) compared to those living with family or a partner ($n = 21$), offering varied social contexts that shaped their experience of the intervention.

Throughout the focus group discussions, participants described the reality of their injury and its impact on their lives prior to engagement in the group. Some alluded towards a sense of disconnection from themselves, others, and their surroundings. This is in keeping with the findings of a meta-synthesis (Levack et al., 2010); with one person describing the experience of ABI as having one's "life swept from underneath you" (Participant 13). In line with previous research, many reported reduced social participation (McLean et al., 2014), with some describing how they seldom left home, felt socially isolated, and did not feel understood by their family and friends (Gibbs, Wilkie, et al., 2022). Regarding the hidden nature of their disability, one person exclaimed that "the outside world really doesn't know anything about brain injuries" (Participant 39). This suggests that many people who took part in the groups previously felt a lack of belonging and thus integration into their family and community life post-ABI. Understanding the circumstances of the cohort with regards to life with ABI provides important context for the following themes.

Theme one: Broadening skills and building for the future: Supporting movement towards an engaged and meaningful life

While reflecting on their initial experience of life with ABI, several participants described a sense of "worthlessness." This is consistent with research which contextualizes a loss of occupational identity following injury (Bryson-Campbell et al., 2013), where difficulties in resuming meaningful roles is associated with feelings of fragmentation and distress after ABI (Levack et al., 2014). Having the opportunity to participate in work-like activities embedded within the Down to Earth intervention provided participants with scope to learn, use, and develop their skills; giving them "a focal point; something to aim for" (Participant 35). This created opportunities through which they could experience a sense of "meaning" (Participant Two) and "fulfilment" in their daily lives (Participant 30), enabling them to regain a sense of self-worth and feel hopeful for a positive and capable future. These experiences carry important benefits for psychological wellbeing (Mead et al., 2021), particularly after ABI, where

experiences of hope can act as a motivator and source of strength to support one's rebuilding (Bright et al., 2011).

I basically was feeling like I had come to the end of my useful life and that I was no use at anything. This has kind of given me a lot of hope. I have actually managed to do stuff and make things and feel important again (Participant 28).

The group activities themselves provided opportunities for participants to practice a diverse range of skills within a suitably challenging and structured context, enabling them to focus on their strengths and capabilities instead of their difficulties and ailments. Some recognized that they could still use the skills that they had before acquiring their injury, but doing so would require adaptability to "learn how to use them differently" (Participant 26). This focus on strengths as opposed to the amelioration of deficits can support more positive appraisals of oneself and the future and has been highlighted as one pathway to ease the process of psychological adjustment post-ABI (Vaghela et al., 2023).

This is a challenge for me. This project gives me a chance to see what I can do, instead of always being reminded of what I can't (Participant 20).

Providing opportunities for achievement paved the way for the experience of positive emotions and increased motivation, making some participants "want to take on more things when [they got] home" (i.e., Participant 30). Some reported transferring the practical skills they acquired during the intervention to benefit their home life, including cooking, as in the case of a participant who engaged in a Murton-based group, or completing the perceivably insurmountable task of decluttering one's home environment (Participant 35) or engaging in exercise, as described below.

I have been feeling internally unfit. Being here is good physical and mental exercise. I am going home feeling motivated. Last week I was prompted to do physical exercise. I went for a run! No-one could believe it! (Participant 26).

Overall, participants alluded to the intervention affording various opportunities for the development the skills and confidence necessary to live more independently, with one person describing how they now felt able to undertake daily living activities that they previously felt unable to do (such as shopping or using public transport). Meanwhile, others emphasized how the group helped them to develop key social and self-management skills and encouraged them to meaningfully consider their direction of work.

We learn new skills for work, and not just the manual work. We learn how to work as part of a team again and how to help and support others. This is something that I really want to do when I get back to work. This project helps me prepare for work and has helped me make up my mind for what type of work I want to do (Participant 15).

This theme highlights how broadening practical and social skills can support movement towards an engaged, meaningful and more independent life, with

positive implications for one's experience of psychological wellbeing (Wood et al., 2009). Good psychological wellbeing broadens social repertoires (Fredrickson, 2001) and contributes to increased social connectedness (DuBois et al., 2012), while having the opportunity to develop social skills and work as part of a team provides key foundations for group memberships. The importance of belonging and identification with group memberships is discussed next.

Theme two: Shared experiences with similar others: Belonging in group memberships

Consistent with group-based interventions delivered in natural outdoor community settings (i.e., Gibbs, Wilkie, et al., 2022), Down to Earth provided an opportunity for participants to connect with others with similar experiences, reducing feelings of loneliness typically experienced following ABI (McLean et al., 2014). This provided nuanced opportunities for participants to learn about themselves and their injury through observation and conversation, with social participation being an important conduit for making sense of oneself post-ABI (Gracey et al., 2008).

You do feel as though you're not alone now ... when it first happens to you, you collapse, implode. Your whole world implodes. Because you think you're the only one, you ask yourself "why?". But then you see that there are other people out there (Participant 44).

Shared experiences paved the way for a sense of mutual identification, belonging and understanding between group members (Salas et al., 2018), creating a safe and comforting community within which participants felt that they were "not judged" and need not explain, apologize or compensate for their difficulties, or "make excuses or try to be something [they're] not" (Participant 8). This might have enabled participants to fully immerse themselves in the natural environment and connect with their authentic selves, which has positive implications for self-esteem, self-regulation, and personal growth (Norton & Watt, 2014; Passarelli et al., 2010; Ray & Jakubec, 2014). Identifying with and feeling a sense of belonging to the group meant that participants could focus on learning and building new skills while reaping the benefits of social engagement (Kemp et al., 2017).

Being here has increased my confidence levels ... It has brought me serenity. It is the one time in my week I can take myself out of my daily world and just be here, just be me ... Here, there has been no need to explain, just get on with the jobs and learn new skills (Participant 27).

In contrast, participants spoke about how their family and friends knew their pre-injury identity, with one person indicating that pre-established connections were perhaps less accepting of who they were in the present moment (i.e., their

post-injury identity). Similarly, another participant indicated how the group afforded them an opportunity to experience joy and social engagement in ways that they had difficulty achieving with their family members since sustaining their injury, such that they stated feeling a lot more like themselves within the group (i.e., Participant 41), while others felt less isolated. This emphasizes the importance of providing ABI survivors with opportunities to identify with new group memberships, particularly in the context of depleted pre-injury social networks (Salas et al., 2018).

We all accept each other for what they are at this moment in time. I think that's really comforting as our family and friends all knew the old us (Participant 9).

One person described their intervention group as their “little net and circle” (Participant 37), within which social resources could be shared (including coping strategies, practical advice, and emotional support) to support adjustment following ABI. The experiences and perception of social support and the quality of social connections have important implications for psychological wellbeing post-ABI (Salas et al., 2022), with these experiences potentially circumventing the mental health impacts of loneliness more so than the quantity or presence of social relationships themselves (Byrne et al., 2022). The group intervention presented opportunities for individuals living with ABI to develop meaningful social connections (or “lifelong friends,” as stated by Participant 11) and engage in skill-building activities with others beyond merely providing opportunities for social contact. Indeed, research suggests that participation in meaningful social activities (such as support groups, work and skill-building programmes) through “meaningful doing” (Gallagher et al., 2015) provides key foundations for social engagement and friendship building post-ABI (Muldoon, Walsh, et al., 2019).

It makes your recovery a lot less isolating ... being here, getting healthy, having tasks to do, makes you want to put things in your personal life right ... So, it gives motivation, confidence and you just don't feel so alone (Participant 17).

The development of new and valued group memberships after traumatic identity change (such as that experienced following ABI) may counter the loss typically experienced following the breakdown of pre-injury group memberships; providing a basis for gains in social identity resources, self-redefinition and social identity reconstruction (Muldoon, Haslam, et al., 2019; Muldoon, Walsh, et al., 2019) that contribute towards increased adaptability (Ellis-Hill & Horn, 2000) and post-traumatic growth (Muldoon, Walsh, et al., 2019). Longitudinal research indicates that post-traumatic growth hereby occurs through stronger connectedness with new group memberships (even when controlling for initial post-traumatic growth in ABI survivors and the effects of pre-injury group memberships) and is associated with reduced post-traumatic stress and increased resilience over time (Jones et al., 2012). Resilience, in addition to a sense of unity and

belonging, may in turn facilitate acceptance of oneself following ABI (Large et al., 2020; Nalder et al., 2019; Patterson et al., 2016) and enhance psychological adjustment (Vaghela et al., 2023). This is discussed accordingly.

Theme three: Self-acceptance and identity: Resources for personal growth

In accordance with previous research, ABI survivors reported experiencing a shift in identity following their injury and grieved the person that they used to be prior to engaging in the intervention, with some harbouring negative feelings towards their post-injury self and having an initially poor self-concept (Beadle et al., 2016). Positively, the Down to Earth intervention helped some participants to learn to “let go” of negative feelings regarding their new identity and accept and embrace their post-injury self, which can have positive implications for engagement with life, meaning making and the development of posttraumatic growth (Allen et al., 2022).

You are suddenly alone and you're alone with this person that you don't know anymore. You have to learn about who this person is, and you have to push yourself. Your family does wrap you in cotton wool, your friends don't know how to handle you ... You sort of have to let go of the old you and you have to learn to embrace the new you (Participant 9).

Further to accepting one's post-injury self, engaging in the intervention helped some participants to realize that there is a life after ABI, and while they may not be in the same position that they were prior to their injury – they could continue living a valued life through adjustment, acceptance and altering their discourse. Acceptance is conducive to psychological adjustment, providing important foundations for growth in individuals with ABI and supporting movement towards a more fulfilled life (Large et al., 2020; Vaghela et al., 2023). To this end, some participants reported feeling grateful for being alive, described an appreciation for medical advancements and their recovery journey and expressed a desire to engage in opportunities presented to them.

Here, you realise that there is a lifeline. I won't be where I was before my injury, but I can get nearer to where I was, just by going a different way (Participant 29).

Having a greater appreciation of oneself and of life itself is a key pillar of psychological growth following ABI, as are having positive shifts in one's life philosophy (Griffin et al., 2022).

Since I had the accident, I know it is going to sound strange, but it's been a godsend, because it stopped me doing what I was doing. I was working six to seven days a week and 100 miles an hour all the time. Always wanted to do, funnily enough, things like this, cob building and what we've been doing ... and doing archery, it's since I've been a kid. Always wanted to do it, but you always sort of put it off ... Coming here has been opening my world up (Participant 2).

Overall, participants recognized that grieving their old selves was a key part of the process towards rebuilding a life after injury, but that engaging in meaningful and functional activities (like those afforded by Down to Earth) presented opportunities for positive change (i.e., psychological growth) to occur. Meaningful functional goal directed activities are day-to-day activities that form the basis for social participation, which include vocational, educational, recreational, social and independent living domains (Wilson, 2010). Participation in these domains provide a sense of meaning and purpose in life, while the Holistic Model of Neurorehabilitation emphasizes the importance of meaningful activity to promote adjustment (Ben-Yishay, 1996, 2000; Ben-Yishay & Prigatano, 1990; Prigatano, 1999).

I feel like this place helps with my patience levels and my acceptance levels. I have felt like I was floating, like I had lost my identity. I am enjoying getting involved, getting hands on and learning and moving (Participant 24).

To this end, some participants taking responsibility for their personal growth and reported a transition towards becoming a “better person now, a more real person” (Participant 32) to which they would continue working to build upon and improve.

I think the one thing that really hit home for me is that when you have a brain injury, no matter what type of brain injury it is, the consultant and nursing team, the amazing team put you back together again, they fix the physical side of you, but they don't fix you properly. You have to go home and almost regrow (Participant 9).

Overall, participant insights hereby highlight the importance of providing opportunities for acceptance, identity-reconstruction and inner-development within neurorehabilitation, as these constructs provide foundations for psychological growth following ABI. Importantly, growth in this context may facilitate and be facilitated by connecting and contributing to domains of wellbeing beyond the self (Mead et al., 2021, 2023), which is captured within the following theme.

Theme four: Connecting and contributing: Towards community and planetary wellbeing

Consistent with theories implicating the role of restoration and stress reduction in regard to the health protective properties of green spaces, spending time in nature was accompanied by feelings of calmness and freedom from distraction; providing a space within which participants could connect to nature (Kaplan, 1995; Kaplan & Kaplan, 1989; Ulrich et al., 1991).

It's an automatic feeling of calm, and there's nothing, there's no phone, there's nothing. You almost feel like you're at one with nature (Participant 9).

Nature connectedness comprises a fundamental psychological need (Capaldi et al., 2014, 2015; Kellert & Wilson, 1993), yet humanity is becoming increasingly

disconnected from nature (Soga & Gaston, 2016). This disconnect was recognized by some participants, with one describing how the natural therapeutic setting of the intervention provided the prime space and context within which they could reflect on their broader values.

Coming out into this sort of environment, it brings you back to what's important. And I think human beings become disconnected so much throughout their lives that they forget all about the outdoors. When you've got an opportunity like this, it grounds you. It kind of reminds you of what's important (Participant 40).

Some participants described how the intervention activities provided them with opportunities to make “a difference” and provide “a valuable contribution” to their community, which made them “feel valued” (Participant 33). A sense of connectedness to a greater whole is critical in the pursuit of a meaningful life (Schueller & Seligman, 2010; Seligman, 2002). Meanwhile, boasting values that go beyond self-serving interest and embracing transcendent sources of meaning, such as nature connectedness and leaving a legacy for the next generation, is associated with several positive indices of psychosocial adaptation, albeit in older populations (Reker & Woo, 2011).

I didn't realise how important it was to be involved in giving back to the community. That makes me feel important and like I'm doing something that is needed (Participant 23).

Recognition of the positive impact of activities embedded within the intervention was hereby extended to the immediate place or setting of the intervention (as captured by the quote below) and more broadly, the planet.

If you think about the community of Gower, I bet they are absolutely stoked that there is a group of people that go around and help look after the environment and all around. So, not only are we benefiting, but the environment is also benefitting, and other people locally who can enjoy that now (Participant 33).

The promotion of sustainable construction methods coupled with eco-education helped participants to learn about the environmental impact associated with various building materials. This, in addition to spending time in nature (DeVillle et al., 2021), supported a shift in perspectives among those who had previously utilized ecologically unsustainable materials to complete personal or work-related projects, encouraging them to “think differently about how we [humans] build” and see value in constructing in ways that “does not deplete the resources” of the planet (Participant 20). Working to reduce or minimize the adverse environmental impact of human activities and preserving the integrity of the natural world reflects a pro-environmental orientation grounded in an ecocentric worldview wherein increased value is ascribed to nature. Overall, participation in the intervention contributed to a sense of investment or “worthwhile future involvement” (Participant 26) towards supporting the future of the planet; with this perhaps further substantiating the

interconnectedness between the natural world and meaning in life. This has key implications for the advancement of clinical therapy and highlights the importance of incorporating domains of wellbeing that extend beyond (but nevertheless impact upon) the individual (Kemp & Edwards, 2022). This is discussed in domain summary below.

Enhancing clinical practice: Key opportunities for service development

Reflections shared across the focus groups highlight key opportunities for supporting service development within the CNS, which are captured and contextualized in this domain summary. While these findings are not generalizable, the learnings of this service evaluation may illuminate useful considerations for neurorehabilitation services seeking to co-create rehabilitative experiences that build foundations for wellbeing, capability, and connection within their own unique contexts.

Firstly, many people living with ABI expressed a preference for therapeutic interventions that immersed them in the outside world and afforded them opportunities to partake in meaningful, group-based skill-development activities to support their rehabilitation, which helped some to feel “inspired to go back to work” (Participant 17). This was contrasted to goal-directed discussions or hospital-based interventions which typically focus on fixing impairment through the completion of arbitrary tasks.

In a hospital you can talk about the way forward, what you need to do and this, that and the other, but then it doesn’t always translate into actual therapy. You’ve got to then go home and either do it yourself or get your family motivated to help you do it (Participant 17).

The outdoors activity-based nature of the intervention presented an authentic setting for rehabilitation and rebuilding to occur, wherein developing practical skills in a group setting was found to be “far more helpful than sitting in a classroom with ten other people learning words” (Participant 8). Engagement in meaningful activities can boost the social value of groups (Cutler et al., 2016) while the meanings and experiences embedded within combined social and practical activities supports sense-making after ABI (Gracey et al., 2008). This highlights the importance of providing more holistic and balanced opportunities for whole health and wellbeing within the natural and local settings within which an individual lives, as these are most likely to enable a person to rehabilitate and function with confidence outside of the clinical setting (Kemp & Edwards, 2022; Kemp & Fisher, 2022).

It’s not only just the task because you could get us into a room or something or whatever room and just give us a load of Lego blocks and say build something ... I think it’s the fresh air, it’s the sense of achievement as it’s going along, you see the progression (Participant 19).

Participants indicated how having clinical staff present meant that staff could observe their functioning in authentic settings, enabling them to gain a truer understanding of their needs, skills, and difficulties while being “on hand” to provide therapeutic support, as highlighted by Participant 11. This emphasizes the importance of working *with* patients in their authentic local and natural settings, as these are the environments through which a person with ABI must navigate and learn to function and thrive as independently as possible. The co-creation of therapeutic experiences within nature-based interventions can be facilitated by the therapeutic relationship, wherein working with individuals to develop autonomy and confidence can support the translation of benefits from a context-specific intervention to a person’s daily life (Harrod et al., 2024).

When you go to the hospital, and you’re getting asked questions all the time, the doctors are not really getting to see what type of person you are. But by you lot coming out here and being with us, you’re actually getting to see what we’re like and what we have to live with and deal with (Participant 34).

Team-based activities set within the local and natural environments of adults living with ABI provided concrete opportunities for community integration post-injury, with this typically comprising a key goal for rehabilitation that carries greater value over and above recovery (Muldoon, Walsh, et al., 2019). Community integration is associated with improved quality of life following ABI (Huebner et al., 2003) and higher levels of wellbeing in disadvantaged populations who typically experience stigmatization (McNamara et al., 2013). Participants compared the natural context of the intervention to individual therapeutic work that they had previously engaged in, to which they described as only offering “hypothetical” advice and support in attempt to facilitate social pillars of wellbeing and functioning. In contrast, it was perceived that the collective aspects of the intervention (connecting to others, nature, and engaging in meaningful activities) made the group a worthwhile and integrating experience, consistent with recent developments in wellbeing science (Kemp & Edwards, 2022; Kemp & Fisher, 2022).

One-to-one doesn’t integrate you, it’s all hypothetical. This sort of group is really integrating (Participant 22).

Despite perceptions of positive change, some expressed concern over the course ending and potentially “falling back to square one” (as stated by Participant 30) without regular opportunities to engage in meaningful group-based activities. This highlights the importance of helping people with ABI to build a positive self-concept of themselves and their capabilities (Harrod et al., 2024) while supporting them to secure personally meaningful opportunities beyond the context of the intervention. This might include mentorship or volunteering, which promotes feelings of wellbeing, belonging and social cohesion (Mead et al., 2023; Seligman, 2011). Several participants across the focus

groups explicitly expressed wanting to return as a volunteer mentor to “help others who are going through the same thing” (Participant 25), with Down to Earth hosting regular reconnection opportunities and volunteer days to enable past attendees to stay connected to its community. This illustrates how interventions delivered in partnership with community providers may present sustainable wellbeing opportunities for individuals living with pervasive impairment using a “bottom-up” approach (Gibbs, Fisher, & Kemp, 2022). However, top-down ways of working are needed to promote and create funding opportunities through which partnerships can be cultivated or strengthened. This is pertinent given that engagement with nature is highly dependent upon accessibility (Nejade et al., 2022); to which one participant suggested that nature-based interventions should be a core component of therapy akin to “giving out antibiotics for an infection” (Participant 9).

Projects like this show what can be done with the right initiative. The more people who know about it, the more accessible it will become for us all.

General discussion and conclusion

Core goals of psychologically informed neurorehabilitation following brain injury include supporting a sense of integration, including the development of an integrated sense of self and identity (Fisher et al., 2022) and meaningful integration into one’s communities (Muldoon, Walsh, et al., 2019; Perumparai-challai et al., 2020; Sander et al., 2010). This service evaluation demonstrates how meaning-focussed, skills-based group interventions embedded in the natural environment can support these aims, providing the context for individuals living with ABI to experience a strengthened connection to themselves (through compassionate self-reflection of one’s strengths and identity), to others (via social group memberships that provide foundations for a sense of belonging and community integration) and to the natural environment (supported by eco-education and meaningful doing in nature). These findings are consistent with recent developments in the field and reflect growing evidence for the role of nature-based interventions in cultivating holistic wellbeing (Kemp & Edwards, 2022; Kemp & Fisher, 2022).

In alignment with the IDGs, such integrative experiences may lay the foundations for building key resources for personal agency and psychological growth (Griffin et al., 2022) that are essential not only for personal recovery but also for broader societal engagement, driving actions to benefit community and planetary wellbeing (Morgan et al., 2022; Pihkala, 2020, 2022). These capacities can serve as enablers for action on the United Nations SDGs, particularly those related to good health and wellbeing, reduced inequalities, sustainable communities and climate action. This highlights the potential value of designing nature-based interventions that cultivate connection and capability; supporting

participants to feel part of something larger while also equipping them to contribute meaningfully to social and planetary wellbeing. However, a complexity of supporting nature identification is the potential for unintended psychological consequences. While not measured in this service evaluation, enhanced nature identification coupled with increased awareness of environmental challenges can elicit difficult feelings of ecological grief or eco-anxiety (Coffey et al., 2021; Cunsolo & Ellis, 2018), which can be isolating, distressing and lead to inaction through disavowal (Passmore et al., 2023). The Power Threat Meaning Framework (Johnstone & Boyle, 2018) provides a valuable lens through which to interpret such responses, framing them not as pathologies to be treated, but as intelligible reactions to threats within broader sociocultural and ecological contexts. If channelled adaptively, however, eco-anxiety can manifest as a practical anxiety which catalyzes problem-solving attitudes and constructive action (Pihkala, 2020). This points to the importance of interventions that not only foster nature connectedness but also build the psychological and relational scaffolding required to engage with ecological realities without becoming overwhelmed. The nature-based ecotherapy intervention described herein illustrates how key capacities associated with inner development can be cultivated, including identity and sense-making, alongside enhanced connectedness, collaboration and compassion toward others and the environment.

Notwithstanding, it is crucial not to overemphasize inner development without acknowledging structural realities. The challenges of sustainable development are not borne solely by individuals or communities; they are fundamentally shaped by systemic forces. This holds particular relevance for marginalized populations such as people with ABI, who may face persistent barriers to ongoing participation in environmental initiatives. Encouragingly, the community interest company delivering the intervention in question plays an active role in addressing some of these social and structural barriers, rejecting notions of ableism which prevent participation. The organization has a strong commitment to working with marginalized and hard-to-reach groups and continues to offer sustained opportunities for meaningful engagement through regular volunteer days and accessible nature-based activities, promoting inclusion beyond the parameters of the structured programme. This highlights the importance of providing sustainable opportunities for the development of internal resources for wellbeing, integration, and outwards contribution through volunteerism, for example (Mead et al., 2023; Seligman, 2011). Future service evaluations and research could explore how these nature-based interventions impact long-term outcomes related to identity, community participation, and ecological wellbeing, further to quantitatively capturing the extent to which participants identify with nature. Such work should also consider how sociocultural discourses, shaped by factors like class, ability, and local context, influence how participants experience and make meaning of nature-based engagement (Wijaya Mulya et al., 2025).

Overall, this service evaluation demonstrates how collaborative working between clinicians, academics, and third-sector organizations can lead to the development of innovative, ecologically attuned interventions that provide holistic opportunities for whole health and wellbeing in persons living with ABI, but in a way that is supportive of the wider environment and society (Gibbs, Fisher, & Kemp, 2022). While this example is context specific and not intended to produce generalizable findings, it offers valuable, situated insights that may inspire service development in contextually comparable clinical settings. It illustrates how clinical practice can be meaningfully enriched by developments in wellbeing science that merge ideas on sustainability and psychology (eco-psychology) (Kemp & Edwards, 2022; Kemp & Fisher, 2022). Rather than presenting a generalizable panacea, this work reflects a shift towards a more ecocentric orientation to healthcare that focuses on systems, wholes and interdependencies and one which prioritizes both human and ecological health needs (Jordan & Hinds, 2017). As with any holistically informed approach, ecotherapy should be grounded in person-centred values, aligning activities with the needs, goals and preferences of those accessing care (Isham et al., 2025). The realization of such opportunities, however, is contingent on strategic and sustained partnership working and investment in community provision. Without this, the accessibility and delivery of nature-based wellbeing interventions – particularly in resource constrained contexts – will remain limited (Gibbs, Fisher, & Kemp, 2022), resulting in missed opportunities to foster the wellbeing of individuals, communities, and the planet upon which all life depends.

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