

«Here Anything is Possible» – Important Factors for Facilitating Water Activities for Individuals with Physical Disabilities: Insights from Rehabilitation Professionals

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Abstract

Bakgrunn: I rehabilitering av personer med fysiske funksjonshemninger har det vært begrenset oppmerksomhet på tilrettelegging av ulike fritidsaktiviteter, spesielt vannsportaktiviteter.

Mål: Denne studien har som mål å utforske viktige faktorer for tilrettelegging av kano- og kajakkpadling for personer med fysiske funksjonshemninger, basert på innsikt fra ergoterapeuter og annet fagpersonell innen rehabilitering i spesialisthelsetjenesten.

Metode: En kvalitativ tilnærming med et fenomenologisk-hermeneutisk forskningsdesign ble benyttet. Ni informanter ble intervjuet individuelt ved hjelp av en semistrukturert intervjuguide. Intervjuene ble tatt opp på lydbånd, transkribert og analysert ved bruk av Systematisk Tekst Kondensering.

Resultater: Det overordnede temaet «Her er alt mulig» ble identifisert, hvor informantene rapporterte at vannsport kan tilrettelegges for alle uavhengig av fysisk funksjonshemming. Viktige faktorer i denne prosessen ble utdypet gjennom fire hovedtemaer:

- 1 individuell tilrettelegging med fokus på ressurser
 - 2 prioritering av sikkerhet
 - 3 økt deltakelse
 - 4 begrenset oppmerksomhet på overgangen til hjemmet
- Hvert hovedtema ble videre utdypet i to undertemaer.

Konklusjon: Funnene viser potensialet for vannsportaktiviteter ved rehabilitering av mennesker med fysisk funksjonshemming, med vekt på individuelle ressurser og sikkerhet.

Stikkord: kano og kajakk, rehabilitering og tilpasset fysisk aktivitet, ergoterapeuter og kvalitativ studie

Det er ingen interessekonflikter mellom forfatterne.

Introduction

Engaging in sports and physical activities is crucial for overall health and quality of life, a fact that holds even greater importance for individuals with physical disabilities (1,2). Physical disabilities arising from various organs may affect physical function, mobility, dexterity, or coordination. These factors can restrict the individual's ability to perform certain tasks, making assistive devices or adaptive techniques essential for maintaining independence and active participation in life (3,4). Individuals with physical disabilities often face inequality and barriers to being active outdoors, due to challenges like limited rehabilitative services and professional expertise, personal factors (e.g., motivation, age, and prior experiences) and environmental obstacles (e.g. insufficient facilities, equipment, funding, transportation, and accessibility) (2,5-9). Consequently, individuals with disabilities tend to be more inactive compared to their non-disabled peers, which increases their risk for various comorbid conditions (10,11). The United Nations (UN) and the World Health Organization (WHO) strongly advocate for health equality, including equitable access to rehabilitation services and outdoor activities for all individuals with disabilities. They assert that inclusive access to outdoor sports transcends health equity as a fundamental human right, ensuring that everyone, regardless of physical ability, can enjoy the benefits of physical activity in natural settings (1,8,12,13).

The benefits of connecting with nature, now recognized as «therapeutic landscapes» (14), have been shown to improve quality of life, encompassing physical, psychological, social health, and even employment opportunities for individuals with different physical disabilities (15-20). Water-based activities, especially canoeing and kayaking, have gained attention for their role in rehabilitation of people with physical disabilities in promoting health, quality of life and participation (21,22). Research shows that these activities offer physical benefits such as improved fitness and mobility, psychological advantages like stress reduction, coping, and increased self-esteem, and social benefits including better communication and friendships (22-24,25-27).

Purposely, rehabilitation professionals', including occupational therapists, focus have been on adapting everyday tasks and employment (27b), with water activities like canoeing or kayaking receiving less emphasis (28). Still, research highlights the

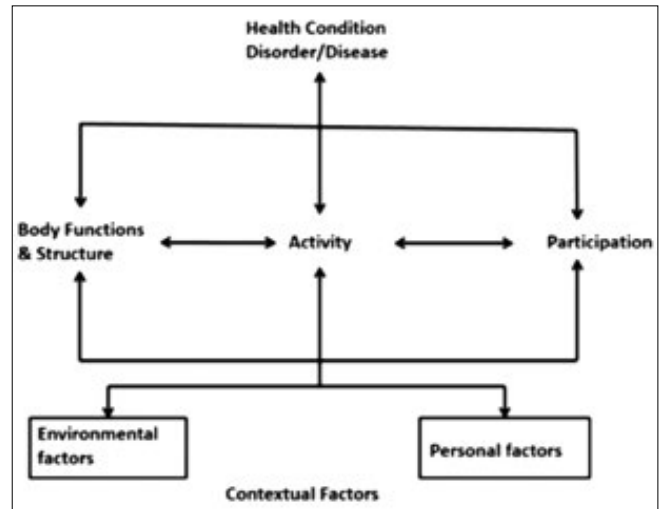


Figure 1: The WHO's ICF Model (retrieved from World Health Organization, 2001 [12, page 9]).

crucial role of rehabilitation professionals in guiding outdoor activities for individuals with physical disabilities to overcome barriers (13,29-31). Yet, there's a scarcity of studies focusing on important factors for facilitation of water activity for this group (2,4,5). Current literature mainly focuses on the necessity of medical screenings, safety protocols, and support that enhance the functional abilities of participants in water sports (25,32). While the health benefits of water activities are well-documented, there is still a significant gap in understanding important factors for the facilitation of canoeing and kayaking for these individuals.

THEORETICAL FRAMEWORK

The WHO's International Classification of Functioning, Disability and Health (ICF) provides a comprehensive framework for understanding function and participation (33). It adopts a biopsychosocial approach to health, recognizing that participation is the result of a complex interplay between biological, individual, and social factors. Participation is thus seen as a multifaceted concept that reflects an individual's involvement in diverse activities and roles, influenced by both personal attributes and the surrounding environment, as illustrated in Figure 1.

The ICF posits that health conditions or injuries, such as physical disabilities, can disrupt body functions and structures and thereby hinder an individual's activities and societal engagement. It acknowledges that personal characteristics – like gender, age, coping strategies, and past experiences – alongside external factors like the physical

Informants	Job Title	Clinical Experience with Facilitation
Anna	Occupational Therapist	Neurology and spinal cord injury
Nina	Outdoor educator	Children; cerebral palsy and multi-functional disability
Ole	Sports educator	Children and youths; cerebral palsy. Adults; amputated, multi-trauma and cancer.
Bernt	Sports educator	Neurology; stroke, multiple sclerosis, and traumatic brain injury
Nils	Sports educator	Functional disorders and spinal cord injury
Martin	Sports educator	Muscle and skeletal disorders, work - oriented rehabilitation and morbid obesity
Susanne	Outdoor educator	Muscle and skeletal disorders, work - oriented rehabilitation and morbid obesity
Noah	Sports educator	Paralysis in lower extremity and hemiparesis, cerebral palsy, mental retardation, impaired balance and physical challenges
Albert	Sports educator	Blind, visually impaired, paralysis, amputations.

Table 1: The Informants' Fictive Names, Job Titles, and Clinical Experiences with Facilitation.

setting, social interactions, and cultural attitudes, significantly shape a person's level of activity. In facilitating water sports like canoeing and kayaking for those with physical disabilities, the ICF emphasizes the need to consider all these aspects to improve participation, functionality, and overall health (33).

OBJECTIVE

This study seeks to expand our understanding of how water activities are made accessible to individuals with physical disabilities. It specifically investigates insights and approaches of rehabilitation professionals within institutional settings as they facilitate canoeing and kayaking for this group. The guiding research question is: «How do rehabilitation professionals describe important factors in enabling canoeing and kayaking for individuals with physical disabilities?»

Material and Methods

METHOD AND DESIGN

Aligned with the research question, we conducted a qualitative study utilizing a phenomenological-hermeneutical research design (34). This design involves a reflective process integrating individuals' expressed lifeworld experiences (phenomenology) with researchers' pre-existing understanding and interpretation. This interplay aims to generate new insight and understanding of a phenomenon (hermeneutic).

ELIGIBILITY CRITERIA, RECRUITMENT AND PARTICIPANTS

To align with the research question, we defined the study's eligibility criteria to include

- 1 rehabilitation professionals defined as occupational- and physio- therapists and sports- and outdoor educators
- 2 employed at institutions operating at the specialist healthcare level in Norway characterized by its responsibility for delivering specialized medical services, such as institution-based rehabilitation services
- 3 integrating canoeing or kayaking into their routine therapeutic activities
- 4 having extended clinical experience with these activities for individuals with physical disabilities
- 5 be proficient in Norwegian
- 6 recruited from various health regions across the country

Participants were purposely recruited from seven rehabilitation institutions that incorporate canoe/kayak activities into their therapeutic programs. The directors of these institutions were briefed on the study's objectives and were entrusted with the task of recruiting informants through direct, face-to-face interactions. Following this, the directors provided the second author with the informants' contact details. Out of the nine professionals approached, all consented to participate. The participants included three women and six men, age ranging from 29 to 52, each with substantial and pertinent clinical

Main question	
Could you please describe your experiences of important factors in facilitating canoeing and kayaking for individuals with physical disabilities?	
Main areas	Follow- up themes if necessary.
Patients body, functions and structure	Type of disabilities Special considerations Preliminary assessments
Environmental factors	Water availability/access Type of boats Other equipment Type of facilitation (e.g. oars, seat, safety)
Personal factors	Patient motivation Promoting/inhibiting factors Introduction to the activity. Safeguarding patients
Activity/Participation	Experienced patient outcome Transferal to patients' home environment

Table 2: The Semi-Structured Interview Guide.

experience in the field of rehabilitation of individuals with physical disabilities and facilitation of kayaking and canoe. For details of the participant demographics, see Table 1.

DATA COLLECTION

The second author conducted individual, face-to-face interviews at the participants' workplaces, employing a pilot-tested semi-structured interview guide anchored in the ICF model. The interviewer commenced each session with a brief introduction and an overview of the study's objectives. The primary inquiry driving the interviews was: «Could you please describe your experiences of important factors in facilitating canoeing and kayaking for individuals with physical disabilities?» Further probing questions were delineated as outlined in Table 2.

Each interview spanned 30 to 45 minutes, was audio-recorded, and subsequently transcribed verbatim, culminating in a comprehensive dataset of 60 pages. Data saturation was reached after the ninth interview, evidenced by the absence of new emerging themes or codes (34). To safeguard participant confidentiality, we anonymized the transcripts by omitting identifying information and assigning pseudonyms.

DATA ANALYSIS

The data analysis was conducted using Systematic Text Condensation (STC), a methodical four-step approach for thematic analysis of textual data. This is a structured method for analyses aligning seam-

lessly with our research design (35). The analysis was a collaborative effort between two authors: The first, a female professor with a background in crisis psychology and experienced in rehabilitation interventions and qualitative research; the second, a female occupational therapist skilled in rehabilitating individuals with a variety of physical disabilities.

In line with STC's four steps, both authors first read the transcribed interviews to gain an overall impression. In step two, we identified and deliberated on meaning units, reaching a consensus on nine distinct units or codes, which were then transferred into NVIVO. In the third step, the identified codes were condensed into one bridging theme and four main themes, each encompassing two subthemes, capturing the core of the participants' narratives. The final step involved cross-referencing the themes with the transcribed text to confirm they accurately reflected the participants' intended meanings. Descriptive quotes to illustrate the findings were identified during this phase. While STC is inherently a structured process, it is crucial to acknowledge that the analysis embodies an interpretive dialogue between the data and the researchers. Throughout, we remained cognizant of our prior experiences and preconceptions, ensuring that a consensus was diligently achieved for all findings. For a comprehensive outline of the analysis process, please refer to Table 3, next page.

ETHICAL CONSIDERATIONS

This study was not subject to the Norwegian Law

Step 1: Obtaining a total impression			
Process	Identified total impression		
a) The authors read the transcribed interviews separately and then b) discussed the total impressions to consensus	Focus on safety. Patient motivation. Coping challenges.Facilitating with ordinary equipment Nature adventures Disabled, equal participant. Lack of transition to home		
↓			
Step 2: Identifying meaning units			
Process	Identified meaning units		
a) The authors coded the data separately and then b) discussed the codes to consensus within the codes	Meaning unit Security and safety Motivation Facilitation Nature/sensory experiences Coping experiences Limited access to facilitation equipment Lack of transition to home	Files 9 9 9 9 8 9 7	References 38 17 132 38 23 23 35
Files = number of informants who mentioned the meaning unit. References = total number of mentions of the meaning unit.			
↓			
Step 3: Abstracting the contents of individual meaning unit			
Process	Abstracted contents/themes		
a) The authors analysed the contents separately and then b) held several discussions to achieve consensus including the context and the authors preunderstanding	Identifying of a unifying concept that was elaborated with four main themes, – each described by three sub themes (see Table 4)		
↓			
Step 4: Summarizing the findings			
Process	Abstracted contents/themes		
a) The authors discussed the findings against the transcribed interviews and then: b) each author found direct statements to elucidate units of meaning and discussed these to consensus	The authors summarized the findings and presented direct statements within the abstracted contents		

Table 3: The Analytic Process using Systematic Text Condensing (STC).

of Healthcare Research and received approval from the Quality Committee of University of Oslo (reference number: 2016/12437) and the Norwegian Centre for Research Data (reference number 55577/3/PCR). The research strictly adhered to the principles of the Helsinki Declaration. All participants were provided with comprehensive oral and written information about the study, and their written consent was obtained. In compliance with the guidelines of the Norwegian Agency for Shared Services in Education and Research, data storage protocols were meticulously followed, and audio recordings of interviews were erased following transcription.

Results

The data analysis revealed a bridging theme: «Here, anything is possible.» All participants unanimously expressed that facilitating canoe or kayak activities was feasible for individuals with diverse physical disabilities. Martin succinctly emphasized, «I cannot think of anyone who cannot do water sports (...). It must be possible to facilitate it for everyone».

However, within this bridging theme, the analysis also pinpointed important factors for successful facilitation, encapsulated in four main themes:

- 1 individual facilitation with a focus on resources,
- 2 prioritizing safety,
- 3 enhanced participation
- 4 limited attention to the transition to home

Each main theme was further elucidated by two subthemes, as detailed in Table 4.

MAIN THEME 1: INDIVIDUAL FACILITATION WITH A FOCUS ON RESOURCES

The informants unanimously highlighted the importance of focusing on the individual resources

of patients, as opposed to their limitations, when facilitating canoeing and kayaking for those with physical disabilities. This theme was further elaborated in two subthemes:

Subtheme 1a: Assessment of Function and Motivation.

The critical need to assess each individual’s functional abilities and motivation was evident. Despite the inherent challenges, informants noted the essential role of creativity in overcoming these hurdles. Ole remarked, «Of course, half-sided paralysis or (...) very big challenges with grip (...). Then, it’s more challenging, and we must show a bit more creativity.» Facilitation was deemed possible even for patients unable to paddle independently, often with the aid of a companion steering the boat. Susanne pointed out the significance of motivation, which is often rooted in the individual’s valuation of outdoor activities and previous experiences, stating, «Motivation is not connected to individual’s limitations. (...) They do not change their personality even if they become disabled.» Conversely, the informants experienced that the patients with negative past experiences, such as hydrophobia, might require additional external motivation to engage in paddling activities.

Subtheme 1b: Use of Ordinary Equipment and Creative Solutions

The informants stressed the use of standard equipment in individual facilitation. Selecting the right boat, often a double kayak for its stability, was crucial. Nina explained, «To my knowledge, no boats are especially made for individuals with a disability. (...) and then you must know what you are looking for.» The absence of specialized equipment necessitated inventive solutions that were available and cost-effective, like modifying paddle handles and

Bridging theme: Here Anything is Possible.	
Elaborated by the following main themes and sub themes:	
Main theme 1: Individual Facilitation with Focus on Resources.	Sub theme 1a: Assessment of Function and Motivation. Sub theme 1b: Use of Ordinary Equipment and Creative Solutions.
Main theme 2: Prioritizing Safety.	Sub theme 2a: The Staff’s Competence and Safe Surroundings. Subtheme 2b: Making the Individual Feel Safe.
Main theme 3: Enhanced Participation.	Sub theme 3a: Coping and Enhanced Participation. Sub theme 3b: Positive Experiences of Nature.
Main theme 4: Limited Attention to the Transition to the Home.	Sub theme 4a: The «Here and Now» Focus. Sub theme 4b: Few Collaborative Partners in the Municipalities.

Table 4: The Study’s Findings.

lengths or employing grip-amplifiers made from bicycle tubes. Nina described these as *«Grip-amplifiers are easily made of old bicycle-tubes. Such simple things that are transferable to people at home. No expensive aids.»* Ensuring the patient's balance in the boat to prevent capsizing was another key consideration. Various adjustments, such as using beanbags, plastic chairs or a ball between the knees, were implemented to support stability in addition to a stable kayak/canoe.

MAIN THEME 2: PRIORITIZING SAFETY

The second main theme underscored the critical importance of safety in the facilitation process. This main theme was explained by two subthemes:

Subtheme 2a: The Staff's Competence and Safe Surroundings

The informants underlined that the expertise of rehabilitation professionals in water safety, life rescue and first aid as vital. Safety considerations also include environmental factors, ensuring safe paddling locations and careful monitoring of weather conditions. Ole noted, *«How is the weather? We have some guidelines with respect to wind, where we paddle, temperature and the like. It's very carefully considered.»* Additionally, within the boat, security decisions are made regarding the suitability of life jackets and the patient's safety in case of capsizing. Noah mentioned, *«We always have a rescue boat (...), with throwline and tow rope.»*

Subtheme 2b: Making the Individual Feel Safe

The informants reported that establishing a sense of safety for the patient involved assessing their anxiety and comfort levels as crucial. Here, the informants' approaches varied; some provided paddling lessons in controlled environments, like a pool, while others gradually built a sense of safety in the water. Nina described this process: *«First having a feeling for the activity and then step by step (...) when their stress level has decreased. Then we ask them to hold the paddle, show paddle techniques and (...) gradual instructions (...). Not too many instructions, but first get onto the water and become safe.»* Ensuring close supervision and support were underlined as essential to balance the challenge with safety. Some participants preferred group settings for these patients, allowing for a variety of activities that help anxious patients to cope.

MAIN THEME 3: ENHANCED PARTICIPATION

This theme explored the informants' perspectives

on the outcomes of the facilitation process for the patients, elaborated by the following sub-themes:

Subtheme 3a: Coping and Enhanced Participation

The significance of introducing patients to new activities was emphasized, as they experienced it to promote coping skills and boosted participation. Martin reflected on the profound impact this have: *«For some patients it has been really, really huge (...) [they] could never imagine that they could paddle kayak, and then they suddenly do (...) [They] get more self-confident, happier.»* The informants also observed that patients applied these newfound coping skills in various aspects of their rehabilitation stay. This included social interactions with other patients, sharing their experiences and gaining the confidence to engage in other physical activities at the rehabilitation center.

Subtheme 3b: Positive Experiences of Nature

This subtheme highlighted the dual benefits the informants experienced from individuals participating in water activities. Not only did the informants experience that these activities bolster resilience and encourage social interaction, but they also facilitate a deeper connection with nature. Nils captured this sentiment: *«A lot of people in Norway highly appreciate nature. It is not possible to climb the mountains if you have problems with your legs, but you can seek out the sea, come close to it and get huge and great nature experiences.»* These encounters with nature were deemed vital for stimulating the senses and shifting patients' focus positively. Albert described the immersive experience: *«Then we can just sit in the kayak quite still (...) just listening (...) see (...) and feel (...). This closeness to nature (...) [whereby] everything changes (...) and the change (...) in a way symbolises changes as (...) pain comes or goes (...) Everything changes all the time.»*

MAIN THEME 4: LIMITED ATTENTION TO THE TRANSITION TO HOME

This theme revealed a significant focus on facilitating activities within rehabilitation centers, yet there was a noticeable gap when it came to extending these experiences to the patients' home settings. This theme was further described by two subthemes.

Subtheme 4a: The «Here and Now» Focus

The informants' primary concentration on the immediate facilitation process was attributed to the demanding schedules of institutional settings. Although some informants offered guidance on how



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patients could continue canoeing or kayaking at home, overseeing equipment selection and exploring feasible options, the majority did not engage in follow-up activities. This lack of continuity brought uncertainty about whether patients maintain their engagement with these activities post-rehabilitation. Martin expresses this concern: *«I hope that it (...) increases the desire to continue the activity (...) but I cannot be sure of what they do at home. I do not know. Usually, we do not talk with them again. They disappear.»*

Subtheme 4b: Few Collaborative Partners in the Municipalities

This subtheme brought to light the challenges of inadequate facilities and the scarcity of collaborative partners in municipalities, which was described as barriers to continuing water activities in patients' home environments. Nina articulated this concern: *«What do they come home to? Several clubs are run by enthusiasts who join a club to paddle themselves, so it's not granted that they (...) welcome someone that needs assistance and cannot join the long tours. That's maybe the biggest obstacle.»*

The informants collectively recognized the diffi-

culties patients encounter when seeking accessible facilities or support from local clubs. To facilitate a smoother transition, the informants advocated for the establishment of connections with local entities, such as occupational therapists or clubs. These partnerships could play a pivotal role in maintaining the patients' engagement with water activities post-rehabilitation. Nils emphasized the potential impact of such collaborations: *«It would have been very reasonable if we (...) or the individual could find that person who could open the door. Be met and start with the activity already the day after leaving here or at least establish contact when they were here. I think that is incredibly important for further participation.»*

Discussion

The aim of this study was to investigate important factors in facilitating canoeing and kayaking for individuals with physical disabilities from the perspective of rehabilitation professionals within institutional settings. The key message of this study was encapsulated in the unifying theme – «Here, anything is possible» – signifying a place of limitless potential

and inclusivity. This study corroborates prior research emphasizing the adaptability of paddling as an activity for individuals with diverse physical disabilities (23,3,25,36). Yet, it also sheds light on the important factors that contribute to effective facilitation (9). These include personal adaptations, adherence to safety measures, anticipated results and the complexities involved in integrating these activities into the patients' daily lives at home, which warrant further discussion.

First, the results underscore a pivotal prerequisite for enabling paddle sports among individuals with physical disabilities: prioritizing their unique resources, past experiences, and motivation over perceived limitations. This approach resonates with the personal factors outlined in the ICF model (33) and is supported by literature that advocates for the consideration of both positive and negative prior experiences (3,5,9). Moreover, this perspective aligns with Merrick and Hillman's (25) findings, which stress the significance of accommodating individual preferences – including choice of exercise, social engagement, risk acceptance, representation of disability and the pursuit of autonomy.

The informants adeptly tailored canoeing and kayaking to accommodate physical disabilities. Interestingly, the majority opted for standard equipment over specialized adaptive gear. They found the conventional options to be more practical, accessible, and cost-effective. This practical approach is supported by Derakhshan and colleagues (9) who underline the importance of flexible use and simple and intuitive adaption of equipment, as well as with the ICF model's strategies for overcoming physical limitations (33). The implication that standard equipment can make canoeing and kayaking accessible is a vital insight for both patients and community-based occupational therapists in serving individuals with physical disabilities.

Secondly, the study's findings emphasize that safety is a critical component for the effective facilitation of paddling activities. This encompasses the need for skilled professionals – such as occupational therapists – comprehensive safety protocols, and vigilant patient safety measures. In line with the personal factors outlined in the ICF model, informants utilized a variety of approaches to introduce the activities, all designed to foster a secure environment for the patients. Factors such as health screenings, previous negative experiences, motivational levels, and age are acknowledged as potential

obstacles to physical activity among those with physical disabilities (5,32).

Moreover, the informants highlighted the significance of environmental safety considerations recommended by the ICF, including the use of standard lifejackets, ensuring staff expertise, choosing safe paddling sites, avoiding solo paddling, staying near the shore and being mindful of weather conditions. This approach aligns with Liberman and colleagues (36), which set forth the necessary qualifications for clinicians overseeing paddling activities for individuals with physical disabilities.

The study's third significant insight reveals that paddle sports offer a spectrum of benefits for individuals with physical disabilities, enhancing their ability to cope and participate actively. Informants observed that patients not only developed better coping mechanisms through these activities, but also applied these newfound skills to overcome other life challenges. This observation is supported by existing research, which advocates the role of paddle sports in advancing health, quality of life and personal achievement, while also reducing stress and bolstering self-esteem and self-efficacy (15,25,37). These positive outcomes are in harmony with the ICF model's assertion that supportive environmental and personal factors contribute to heightened levels of activity and engagement, a crucial aspect given the finite duration of stays in rehabilitation centers.

Furthermore, informants viewed paddle sports as a vital platform for patients to engage on an equal level with others, thereby boosting motivation. This perspective is supported by studies that recognize the social advantages of paddle sports, including fostering equality, forging friendships, nurturing connectedness, and facilitating communication (21,25,26). Additionally, informants leveraged paddling as a means to connect patients with nature, enriching their sensory experiences. This natural immersion served an educational purpose as well, linking the experiences gained in natural settings to real-life scenarios. Such findings echo the sentiment that being near water can have therapeutic effects, positioning bodies of water as «therapeutic blue spaces» that contribute to overall well-being (14,38).

The study's fourth key insight is that, despite the informants' substantial efforts to introduce canoeing and kayaking at the rehabilitation centre, they did not adequately ensure that patients could continue these activities at home. The difficulty in transitioning these experiences to the home setting



The informants highlighted the significance of environmental safety considerations recommended by the ICF.

was linked to several factors: A lack of ongoing communication post-discharge, insufficient local facilities, and the absence of collaborative partners in the community. This raises questions about the practicality of such initiatives if patients are unable to pursue them post-rehabilitation. Nonetheless, this challenge is consistent with WHO reports documenting poor coordination and ineffective referral systems between healthcare levels for individuals with disabilities (8). Similar, research indicates that participation barriers for individuals with physical impairments often stem from the need for support to navigate environmental obstacles, such as inadequate facilities, equipment, expertise, transportation and access (3,6). Moreover, the informants recognized their shortcomings regarding this vital environmental aspect of the ICF. They suggested potential solutions, including appointing a dedicated liaison person within the community, fostering collaboration between rehabilitation centres and local communities, and devising a concrete plan with patients to maintain their involvement in water-based activities – all being factors also suggested in previous literature (39). Consequently, a synergistic partnership

between rehabilitation professionals in rehabilitation centres and those in primary healthcare seems essential to successfully transitioning water-based activities into the home environment following the completion of rehabilitation programs. Such continuity of care is vital for the sustained benefits of aquatic therapy and the long-term well-being of patients.

METHODOLOGICAL CONSIDERATIONS

The qualitative nature and limited sample size of this study mean that the findings cannot be generalized. Nevertheless, the informants' varied backgrounds and their connections to different rehabilitation centres across the country have enriched the data, leading to a comprehensive saturation. This variety, along with a clear and open analysis process, bolster the study's robustness. It indicates that the insights gained may be applicable and reliable beyond the immediate research setting (34). A notable strength of the study is its integration with the ICF theoretical framework, which adds depth to the results. However, the study's broad approach, encompassing

a wide range of physical disabilities, is a limitation. Concentrating on a singular type of disability might have provided more detailed and specific insights.

Conclusion

The findings of this study affirm that not only is it feasible to facilitate canoeing and kayaking for those with physical disabilities, but it is also immensely beneficial. The bridging theme, «Here anything is possible,» reflects the conviction among the participants that water sports can be made accessible for individuals with a range of physical disabilities. However, effective facilitation hinges on several key factors: A thorough assessment of each individual's abilities and motivation, the innovative use of standard equipment, a strong emphasis on safety, and the encouragement of active participation. While the study reveals a disconnect in the transition from institutional rehabilitation to ongoing home-based activities, it highlights the significant therapeutic value of water sports. It calls for increased resources, inventive approaches, stringent safety protocols and better strategies to bridge the gap between rehabilitation settings and home environments. Consequently, occupational therapists and other rehabilitation professionals can play a crucial role in adapting canoeing and kayaking for individuals with physical disabilities due to their expertise in activity analysis and adaptation both in rehabilitation institutions and in primary healthcare settings. Further research is encouraged to broaden access and enhance the enjoyment of these activities for individuals with physical disabilities.

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References

1. United Union. United Union's Convention on the Rights of Persons with Disabilities (CRPD). United Unions, Geneva, 2006. Retrieved 01.07.2024: Convention on the Rights of Persons with Disabilities (CRPD) | Division for Inclusive Social Development (DISD) (un.org)
2. Carty C, van der Ploeg HP, Biddle SJH, et al. The first global physical activity and sedentary behaviour guidelines for people living with disability. *Journal of Physical Activity and Health*. 2021;18(1):86-93. <https://doi.org/10.1123/jpah.2020-0629>
3. Darcy S, Lock D, Taylor T. Enabling inclusive sport participation: Effects of disability and support needs on constraints to sport participation. *Leisure Sciences*. 2017;39(1):20-41. <https://doi.org/10.1080/01490400.2016.1151842>
4. Kiuppis F. Inclusion in sport: disability and participation. *Sport in Society*. 2018;21(1):4-21. <https://doi.org/10.1080/17430437.2016.1225882>
5. Martin Ginis KA, van der Ploeg HP, Foster C, et al. Participation of people living with disabilities in physical activity: a global perspective. *The Lancet*. 2021;398(10298):443-455. [https://doi.org/10.1016/S0140-6736\(21\)01164-8](https://doi.org/10.1016/S0140-6736(21)01164-8)
6. Jaarsma EA, Dijkstra PU, Geertzen JHB, Dekker R. Barriers to and facilitators of sports participation for people with physical disabilities: A systematic review. *Scandinavian Journal of Medicine & Science in Sports*. 2014;24(6):871-881. <https://doi.org/10.1111/sms.12218>
7. Menzies A, Mazan C, Borisoff JF, Mattie JL, Mortenson WB. Outdoor recreation among wheeled mobility users: perceived barriers and facilitators. *Disability and Rehabilitation: Assistive Technology*. 2021;16(4):384-390. <https://doi.org/10.1080/17483107.2019.1710772>
8. World Health Organization. Global report on health equity for persons with disabilities. Geneva: World Health Organization; 2022. Retrieved 01.07.2024. file:///C:/Users/zas001/Downloads/9789240063600-eng.pdf
9. Derakhshan P, Miller WC, Bundon A, Labbé D, Bolt T, Mortenson WB. Adaptive outdoor physical activities for adults with mobility disability: a scoping review. *Frontiers in Rehabilitation Sciences*. 2024;4. <https://doi.org/10.3389/fresc.2023.1331971>
10. Hollis ND, Zhang QC, Cyrus AC, Courtney-Long E, Watson K, Carroll DD. Physical activity types among US adults with mobility disability. *Disability and Health Journal*. 2020;13(3). <https://doi.org/10.1016/j.dhjo.2020.100888>
11. Watson MP, Stendell L, Middleton JW, Arora M, De Oliveira CQ, Davis GM. Physical activity and spinal cord injury: Behaviour, barriers, motivations and gains. *Journal of Clinical Exercise Physiology*. 2024;13(2):349-349. <https://doi.org/10.31189/2165-7629-13-s2.349>
12. World Health Organization. International Classification of Functioning, Disability and Health (ICF). World Health Organization, Geneva; 2001. <https://apps.who.int/iris/handle/10665/42407>
13. United Nations. United Nations Disability Inclusion Strategy. Geneva: United Nations; 2019. https://unsceb.org/sites/default/files/imported_files/CEB.2019.1.Add._6%20-%20UNDIS_1.pdf
14. Foley R, Kearns R, Kisteman T, Wheeler Br. Blue space, wellbeing and health. *Hydrophilia unbounded*. New York: Routledge; 2019. ISBN: 978-0-8153-5914-2
15. Finlay J, Franke T, McKay H, Sims-Gould J. Therapeutic landscapes and wellbeing in later life: Impacts of blue and green spaces for older adults. *Health Place*. 2015; 34:97-106. <https://doi.org/10.1016/j.healthplace.2015.05.001>

16. Ottosson J, Lavesson L, Pinzke S, Grahn P. The significance of experiences of nature for people with Parkinson's Disease, with special focus on freezing of gait. The necessity for a biophilic environment. A multi-method single subject study. *Int J Environ Res Public Health*. 2015;12(7):7274-7299. <https://doi.org/10.3390/ijerph120707274>
17. Meneghello F, Marcassa G, Koch I. Garden therapy in neurorehabilitation: well-being and skills improvement. *Acta Hort*. 2016;11(21):13-18. <https://doi.org/10.17660/ActaHortic.2016.1121.3>
18. Lastuka A, Cottingham M. The effect of adaptive sports on employment among people with disabilities. *Disability and Rehabilitation*. 2016;38(8):742-748. <https://doi.org/10.3109/09638288.2015.1059497>
19. Youngson L, Foster C, Lambert J. The physical and mental health benefits of lifestyle sports for disabled people: A scoping review. *International Journal of Disabilities Sports and Health Sciences*. 2023;6(1):60-81. <https://doi.org/10.33438/ijds.1197978>
20. Ryan SJ, Bolten E, Abolhosn N, Adams J, Bocianski H. "It doesn't die within you": Outdoor recreation participation following spinal cord injury. *Occupational Therapy Journal of Research*. 2024;44(2):227-235. <https://doi.org/10.1177/15394492231175070>
21. Cugusi L, Meloni M, Bergamin M, et al. Health effects of outdoor water sports in chronic disease: a scoping review. *Sport Sciences for Health*. 2023;19(1):1-15. <https://doi.org/10.1007/s11332-022-00989-y>
22. Naumann K, Kernot J, Parfitt G, Gower B, Davison K. Water-based interventions for people with neurological disability, autism, and intellectual disability: A scoping review. *Adapted Physical Activity Quarterly*. 2021;38(3):474-493. <https://doi.org/10.1123/apaq.2020-0036>
23. Choi W, Lee S. Ground kayak paddling exercise improves postural balance, muscle performance, and cognitive function in older adults with mild cognitive impairment: A randomized controlled trial. *Medical Science Monitor*. 2018;24:3909-3915. <https://doi.org/10.12659/MSM.908248>
24. Shujaat F, Soomro H, Khan M. The effectiveness of Kayaking exercises as compared to general mobility exercises in reducing axial rigidity and improve bed mobility in early to mid-stage of Parkinson's disease. *Pakistan Journal of Medical Sciences Quarterly*. 2014;30(5):1094-1098. <https://doi.org/10.12669/pjms.305.5231>
25. Merrick D, Hillman K, Wilson A, Labbé D, Thompson A, Mortenson WB. All aboard: users' experiences of adapted paddling programs. *Disability and Rehabilitation*. 2021;43(20):2945-2951. <https://doi.org/10.1080/09638288.2020.1725153>
26. Lape EC, Katz JN, Losina E, Kerman HM, Gedman MA, Blauwet CA. Participant-reported benefits of involvement in an adaptive sports program: A Qualitative Study. *PM&R*. 2018;10(5):507-515. <https://doi.org/10.1016/j.pmrj.2017.10.008>
27. Reljin V. Effects of adaptive sports on quality of life in individuals with disability. *Disabil Rehabil Assist Technol*. 2024;8:1-17. <https://doi.org/10.1080/17483107.2024.2313110>
- 27b. Law M. Participation in the Occupations of Everyday Life. *The American Journal of Occupational Therapy*. 2002;56(6):640-649. <https://doi.org/10.5014/ajot.56.6.640>
28. Costalonga DA, Crozier AJ, Stenner BJ, Baldock KL. Sport as a leisure occupation in occupational therapy literature: A scoping review. *The American Journal of Occupational Therapy*. 2020;74(3). <https://doi.org/10.5014/ajot.2020.035949>
29. Standal Ø F, Nyquist TEH, Mong HH. Adapted physical activity professionals in rehabilitation: An explorative study in the Norwegian context. *Adapt Phys Activ Q*. 2018;35(4):458-475. <https://doi.org/10.1123/apaq.2017-0128>
30. Wareham Y, Burkett B, Innes P, Lovell GP. Coaching athletes with disability: preconceptions and reality. *Sport in Society*. 2017;20(9):1185-1202. <https://doi.org/10.1080/17430437.2016.1269084>
31. Takagaki AS. Improving awareness and access to adaptive sports. Scholarship and Open Access Repository. 2020. Improving Awareness and Access to Adaptive Sports (core.ac.uk)
32. Nathanson AT, Young JMJ, Young C. Pre-participation medical evaluation for adventure and wilderness water sports. *Wilderness & Environmental Medicine*. 2015;26:S55-S62. <https://doi.org/10.1016/j.wem.2015.09.008>
33. World Health Organization. Towards a common language for function, disability and health (ICF). Geneva: World Health Organization.; 2002:1-20. <http://www.who.int/classifications/icf/icfaptraining/en/index.html>
34. Renjith V, Yesodharan R, Noronha JA, Ladd E, George A. Qualitative methods in health care research. *Int J Prev Med*. 2021; 12:20. https://doi.org/10.4103/ijpvm.IJP-VM_321_19
35. Malterud K. Systematic text condensation: A strategy for qualitative analysis. *Scandinavian Journal of Public Health*. 2012;40(8):795-805. <https://doi.org/10.1177/1403494812465030>
36. Lieberman LJ. Activities of daily living experienced through outdoor adventure activities: intentional instruction for individuals with disabilities. *Journal of Outdoor and Environmental Education*. 2022;25(1):61-73. <https://doi.org/10.1007/s42322-022-00097-y>
37. Petersen G, Rogers E, Togneri M, Lee C, Quinto A. The impact of outdoor adaptive play and leisure on quality of life for youth with disabilities. *The American Journal of Occupational Therapy*. 2020;74(4_Supplement_1). <https://doi.org/10.5014/ajot.2020.74S1-PO6206>
38. Völker S, Kistemann T. The impact of blue space on human health and well-being – Salutogenetic health effects of inland surface waters: A review. *International Journal of Hygiene and Environmental Health*. 2011;214(6):449-460. <https://doi.org/10.1016/j.ijheh.2011.05.001>
39. Dineen-Griffin S, Garcia-Cardenas V, Williams K, Benrimoj SI. Helping patients help themselves: A systematic review of self-management support strategies in primary health care practice. *PLOS ONE*. 2019;14(8): e0220116. <https://doi.org/10.1371/journal.pone.0220116>