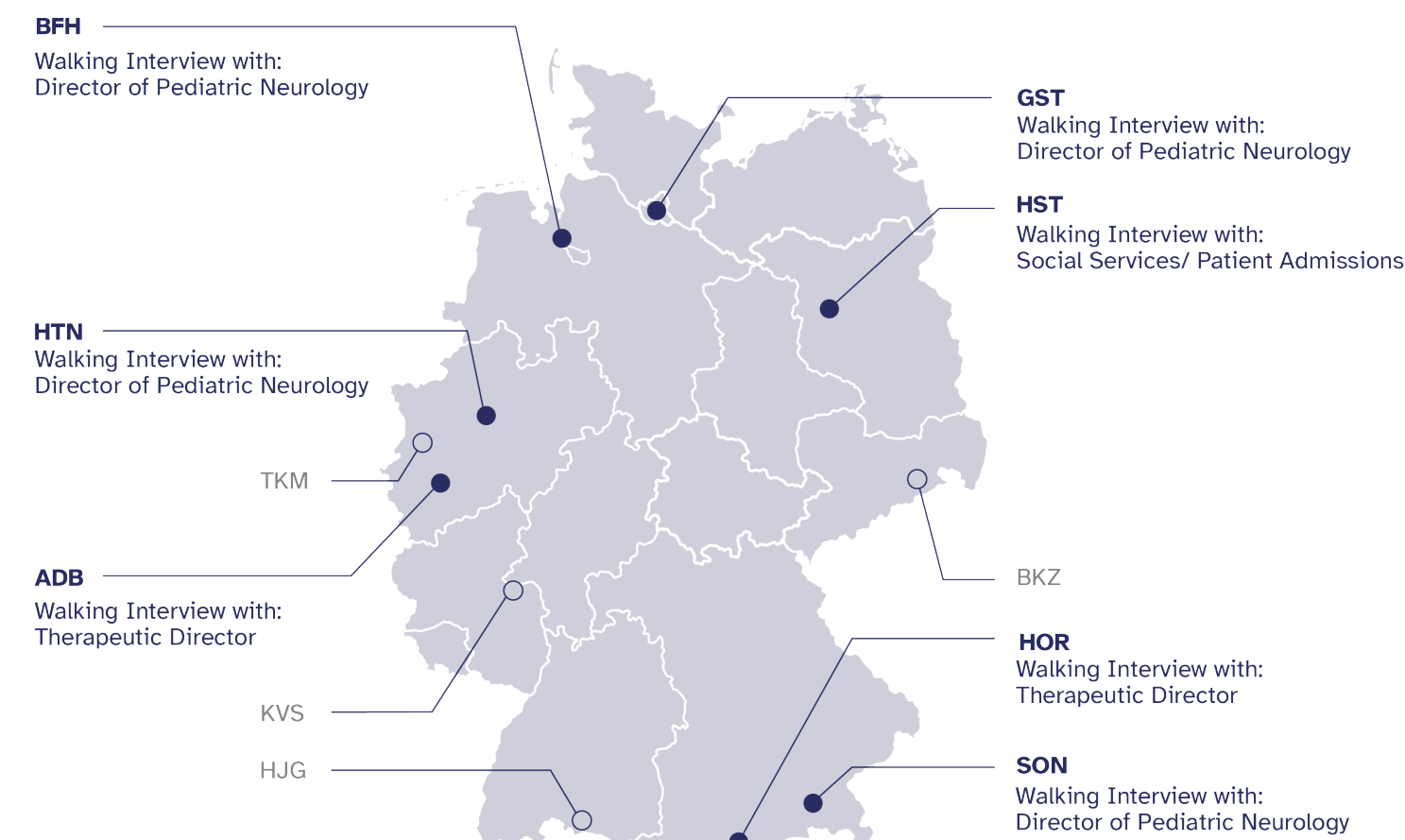




Neurorehabilitation Centers for Children and Adolescents



Eleven pediatric neurorehabilitation centers in Germany were identified based on information from earlier stages of the BUILD CARE project and listings by patient organizations. Seven of these centers agreed to participate in the current study (shown in dark blue on the map).

Introduction

Research on adult stroke recovery emphasizes the role of the built environment in rehabilitation, yet its impact on pediatric stroke care remains largely unexplored. Although childhood stroke is rare, it often results in long-term cognitive, physical, and behavioral impairments such as hemiparesis, ataxia, seizures, and visuosperceptual deficits (Steinlin, 2012). These impairments shape how children interact with their surroundings, particularly in rehabilitation centers. In Germany, nearly half of affected children undergo inpatient rehabilitation, either after the acute incident or even years later (Werpup et al., 2011). Rehabilitation focuses on addressing stroke-related deficits, including improving mobility, speech, and daily living skills such as washing, dressing, and self-care. Despite this, the role of the built environment in pediatric neurorehabilitation centers remains unstudied. The architectural diversity of these centers — ranging from building typologies to spatial layouts, as illustrated in the vertically arranged floor plans to the right — underscores the complexity of designing such environments. Still, little is known about how these spaces should be designed to meet the needs of children with stroke or what specific resources healthcare professionals require to provide optimal care.

Methods

This study investigates the built environment of pediatric neurorehabilitation centers in Germany, with a focus on pediatric stroke care. Seven site visits were conducted, which included walking interviews with healthcare professionals such as neuropsychiatrists, therapists, and social workers. These interviews were complemented by annotated floor plans that mapped relevant care locations and linked spatial features to the insights shared by healthcare professionals. As part of the study, healthcare professionals were tasked with guiding researchers through the clinics, showcasing where and how care for children with stroke takes place. Their walking routes were mapped onto the building floor plans. Spatial features highlighted by the healthcare professionals during the walkthrough were documented, localized on the floor plans, and supplemented with photographs of noteworthy details.

Results

During the walking interviews, healthcare professionals emphasized specific spatial and functional needs for therapy and treatment rooms for children recovering from stroke, including:

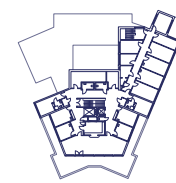
- (1)** minimizing distractions in therapy rooms to help children with concentration difficulties maintain focus during sessions, while also creating **motivating environments that support children's independence** — for instance, designing spaces according to anthropometric principles to allow children to move freely and access objects on their own,
- (2)** ensuring adequate **space for movement and gait training** for children with hemiparesis, as space constraints often lead healthcare professionals to use corridors for therapy, and
- (3)** implementing efficient **storage systems for a wide range of therapy equipment** designed for children of different ages, with varying size and weight requirements, ensuring quick access to the necessary tools for therapy sessions. Limited storage often results in equipment being stored in corridors, hindering therapy activities that sometimes occur there.

The findings capture the perspectives of healthcare professionals, connecting their experiences to the physical spaces they navigate within the rehabilitation centers. This poster visually presents a walkthrough from one of the seven clinics studied. The three key themes identified in the results are marked with numbers (1-3) on the annotated clinic floor plan, highlighting both the opportunities and challenges within these environments.

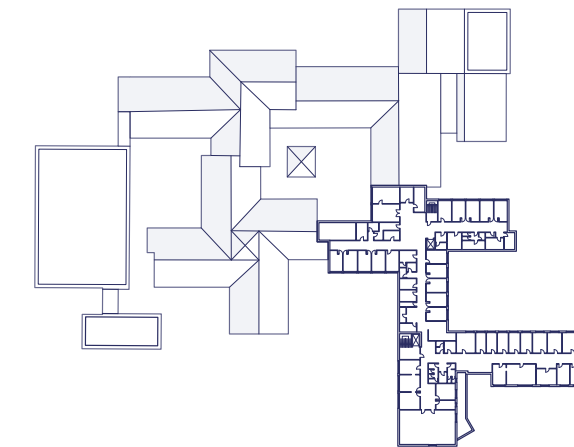
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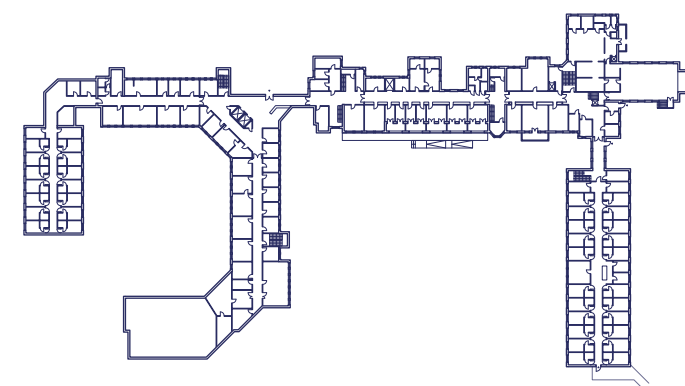
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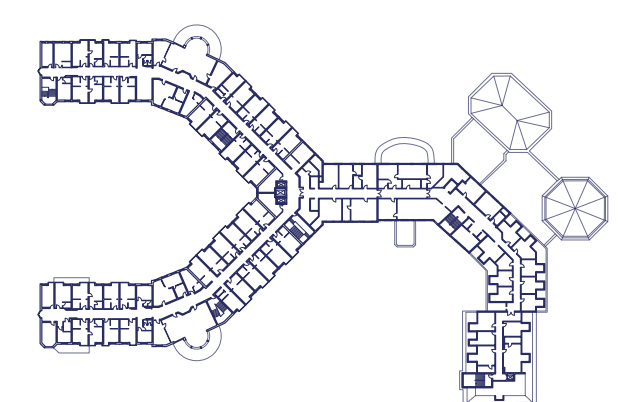
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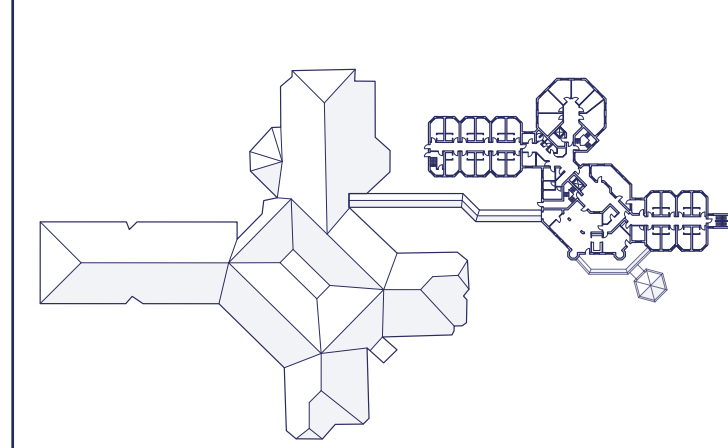
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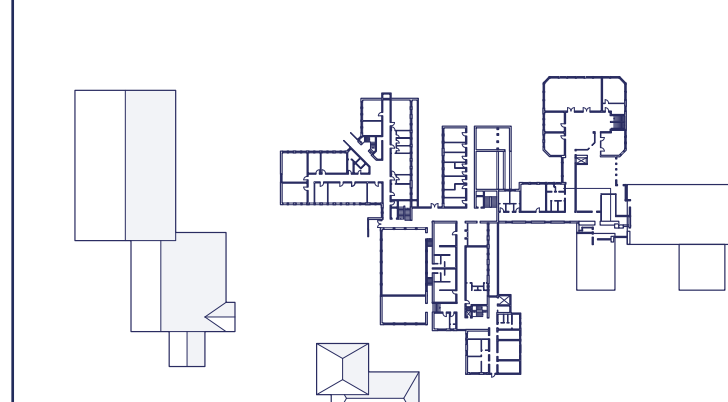
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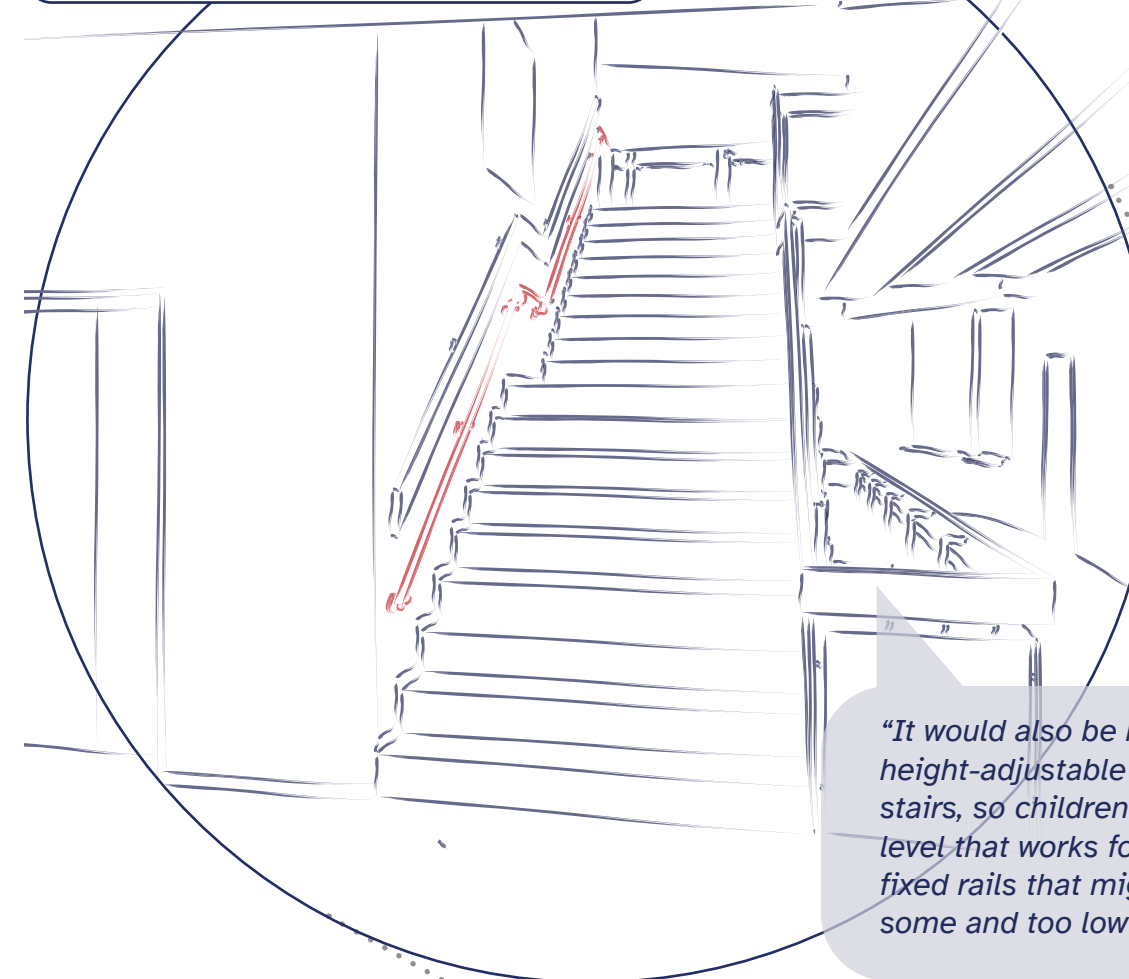
HTN



HOR



Using Stairs for Therapy: The Need for Handrails at Child's Height on Both Sides



"It would also be helpful to have height-adjustable handrails on stairs, so children can hold on at a level that works for them, instead of fixed rails that might be too high for some and too low for others."

Everyday Surfaces as Rehabilitation Tools: Training Gait Stability on Uneven Ground



"When we're talking about children with hemiparesis, they're usually able to walk independently. The focus is often on improving walking safety - helping them fall less, manage steps on their own, and especially climb stairs more securely. A common goal is for them to move between floors at home by themselves, especially if their bedroom is upstairs."

Therapy Rooms: Reducing Distractions, Enhancing Motivation



Storage Area: The Challenge of Storing Therapy Tools and Mobility Aids for Various Age and Weight Ranges



"We have a storage area that's packed with all kinds of stuff you can use for therapy. I really think that, in terms of equipment and materials, we're very well set up."

Multi-Use Space: Corridor becomes Storage and Therapeutic Space



"Here, they can actually use all their mobility aids freely and really try things out, because there's just enough space. That's usually not possible at home, and it's the same in most physiotherapy practices and schools."



Children's Anthropometry: How Screen Placement Creates a Visual Barrier at the Reception Desk

"Heavy doors can't be opened by children in wheelchairs, or even by smaller, more fragile children."

Too High to Reach: When the Counter Excludes Children



"I'm not sure every child would be able to reach the sink to wash their hands or use the faucet properly."



"The terrace is built like this with a step. [...] I think the terrace is difficult for children to reach with a rollator if their parents aren't there."