

# OPP: APPLICATION FIELDS & INNOVATIVE TECHNOLOGIES

## Therapy laboratory for activation of neuromotor skills through serious games in education and research

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**Purpose** This abstract provides an overview of the new digital therapy laboratory at Hamm-Lippstadt, University of Applied Sciences, emphasizing its role in shaping future gerontological research. It highlights the lab's potential to facilitate studies on digital cognitive therapies and visual-cognitive training, and their impact on improving the quality of life among the elderly, particularly during challenging times. **Method** Establishing a therapy laboratory with state-of-the-art therapy equipment for the rehabilitation of neuromotor disorders within a university setting offers several benefits for both teaching and research: Students gain hands-on experience with cutting-edge therapy equipment, allowing them to develop practical skills and deepen their understanding of neuromotor rehabilitation techniques. The laboratory serves as a collaborative space for engineers, psychologists, therapists, and students from various disciplines to work together on research projects, fostering interdisciplinary collaboration and knowledge exchange. They have access to advanced digital therapy systems which are based on serious games (Figure 1): the Tovertafel for individuals with dementia, therapy devices from Neofect (Smart Board, Smart Gloves and Cognition Trainer) for stroke patients and the SKILLCOURT to improve neuroplasticity by visuomotor training. Although research projects are in the preparatory phase, expectations are high regarding the laboratory's contribution to the field of gerontological research. The unique interdisciplinary setting allows for comprehensive studies into how digital interventions can be optimized to improve cognitive functions and quality of life. This lab not only aims to produce significant scientific knowledge but also to strengthen collaborations across various sectors. The ultimate goal is to translate research findings into practical applications that can be integrated into regular care practices, especially during times of crisis when the elderly are most vulnerable. The digital therapy lab stands as a beacon for future gerontological research, offering a platform for exploring innovative therapeutic methods. The research conducted here will provide crucial insights into the role of technology in enhancing the lives of the elderly, potentially reshaping how care is administered in geriatric settings. Furthermore, the lab is poised to attract new partners, thereby expanding its research scope and improving the overall effectiveness of digital therapies in gerontology. **Results and Discussion** Overall, the establishment of a therapy laboratory with modern therapy equipment within a university setting enriches both teaching and research endeavors, ultimately contributing to advancements in the field of neuromotor rehabilitation to develop new, cost-effective, digital systems for the therapy at home. The digital therapy laboratory at Hamm-Lippstadt University represents a significant step forward in gerontological research. Collaborative projects with existing partners such as the Alzheimer's Society Hamm, Hamm Telemedicine Center, and Ambulanticum will help to establish comprehensive long-term studies, examining the efficacy of digital interventions in cognitive and physical health of the elderly.

**Keywords:** gerontology, digital therapy lab, cognitive stimulation, interdisciplinary research, elderly quality of life

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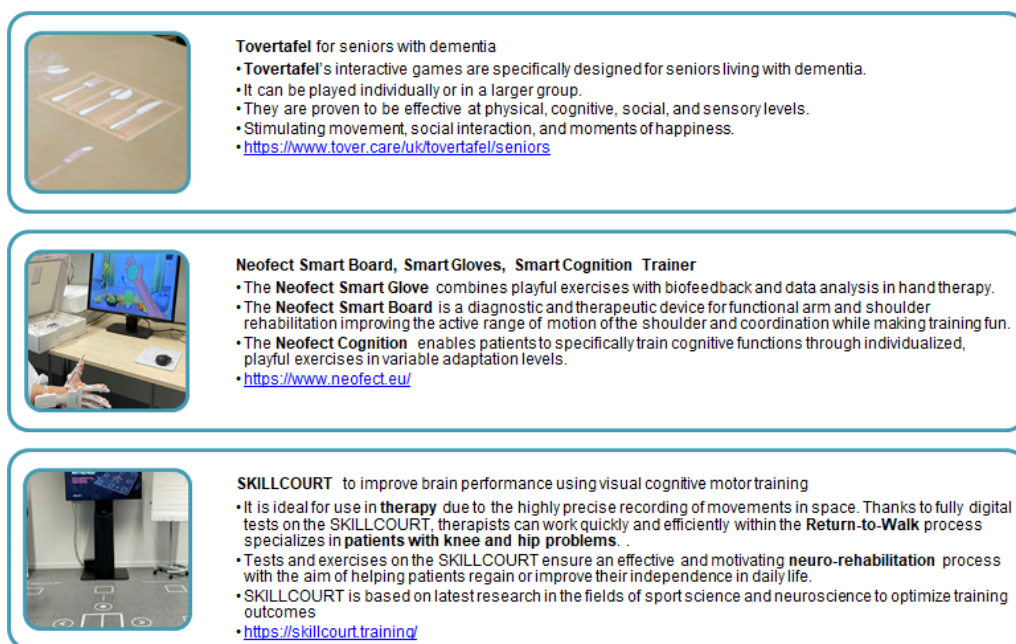


Figure 1. Overview of available digital therapy systems