

3rd World Conference on
Ageing and Gerontology
July 09-10, 2026 | Frankfurt, Germany



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Technical assistance system for monitoring mobility and nutrition of older adults for preventive care and healthy aging: A pilot study

With increasing life expectancy, preventive strategies that promote healthy aging and independence in old age by addressing early declines in mobility and nutritional status are highly important. However, it is often difficult for older adults to implement recommendations or therapies that have been started for physical activity or dietary adjustments in everyday life. This pilot study of the AS-Tra project (Assistance System for the Sustainable Improvement of the Nutritional and Mobility Status of Older Adults Considering the Transtheoretical Model of Behavior Change) investigates whether a technical assistance system, combining a tablet-based app with a measurement and training station (MuTS), can support older adults (≥ 70 years) in regularly assessing key indicators of mobility and nutrition as part of preventive care. Over a period of four weeks, a total of $n=10$ participants used the system regularly to perform standardized geriatric assessments (grip strength, Timed Up and Go, 5-Time Chair Rise) and training after one week (T0), two weeks (T1), and four weeks (T2). Their food intake was documented approximately twice (in the weeks before T0 and before T2) for three consecutive days each time using the tablet-based food diary. Validated questionnaires such as the Short Physical Performance Battery (SPPB) and the Mini Nutritional Assessment–Short Form (MNA-SF) were used at the beginning of the study (BL) and at T2 to assess mobility and nutritional status. The study shows that technology-based monitoring enables the collection of mobility and nutrition data. Overall, the results show that the AS-Tra system is well suited for independent use by older adults. This can contribute to supporting preventive care and maintaining mobility and adequate nutrition, thereby promoting healthy aging and longevity.

Keywords: Healthy Aging, Mobility, Nutrition, Technical Assistance System, Geriatric Assessments

Biography

I am holding a Master of Science in Bionics – Mobile Systems and a Bachelor of Science in Medical Engineering. Since 2023, I have worked as a research associate in medicine and health sciences focusing on user-centered development and evaluation of technical assistance systems for older adults at University Oldenburg. Since May 2025, I have been working at OFFIS (an institute affiliated with the university) in the department ‘Assistive Technologies for Care and Nursing’. My work includes projects on nutrition and mobility in aging populations, app development, and the implementation of digital solutions to support preventive care and independent living.