

North Carolina, United States, 4. Duke University, School of Medicine, Durham, North Carolina, United States

**Background.** Functional decline in conjunction with low levels of physical activity has implications for health risks in older adults. Previous studies have examined the associations between accelerometry-derived activity and physical function, but most of these studies reduced these data into average means of total daily physical activity (e.g., daily step counts). A new method of analysis “functional data analysis” provides more in-depth capability using minute-level accelerometer data. **Methods.** A secondary analysis of community-dwelling adults ages 30 to 90+ residing in southwest region of North Carolina from the Physical Performance across the Lifespan (PALS) study. PALS assessments were completed in-person at baseline and one-week of accelerometry. Final analysis includes 669 observations at baseline with minute-level accelerometer data from 7:00 to 23:00, after removing non-wear time. A novel scalar-on-function regression analysis was used to explore the associations between baseline physical activity features (minute-by-minute vector magnitude generated from accelerometer) and baseline physical function (gait speed, single leg stance, chair stands, and 6-minute walk test) with control for baseline age, sex, race and body mass index. **Results.** The functional regressions were significant for specific times of day indicating increased physical activity associated with increased physical function around 8:00, 9:30 and 15:30-17:00 for rapid gait speed; 9:00-10:30 and 15:00-16:30 for normal gait speed; 9:00-10:30 for single leg stance; 9:30-11:30 and 15:00-18:00 for chair stands; 9:00-11:30 and 15:00-18:30 for 6-minute walk. **Conclusion.** This method of functional data analysis provides new insights into the relationship between minute-by-minute daily activity and health.

#### PERCEIVED VALUE OF USING A DIGITAL TOOL TO SCREEN FOR ELDER MISTREATMENT IN THE EMERGENCY DEPARTMENT

Fuad Abujarad,<sup>1</sup> Thomas Gill,<sup>1</sup> Michael Pantalon,<sup>1</sup> Karen Jubanyik,<sup>1</sup> James Dziura,<sup>1</sup> Gail D’Onofrio,<sup>1</sup> and Esther Choo,<sup>2</sup> 1. Yale University, New Haven, Connecticut, United States, 2. Oregon Health & Science University, Portland, Oregon, United States

A major barrier to reducing Elder Mistreatment (EM) is an inability to accurately identify victims. We conducted a qualitative study to evaluate stakeholders’ perceived value and likelihood of adopting a tablet-based digital health tool to facilitate screening and prompt self-disclosure of EM in emergency departments (ED). The interactive tool utilizes virtual coaching, interactive multimedia libraries (graphics, animations, etc.), electronic screening, and brief motivational interviewing designed to enhance identifying EM among older adults. We conducted 3 focus groups with stakeholders, including 24 adults 60+ years, 2 social workers, 2 caregivers, and 2 ED clinicians. Two focus groups included only older adults, while one included representatives of all stakeholders. The main findings include: using a female voice for the tool narrator, larger font size, more multimedia, and headphones for privacy; and making a person available during screening if assistance is needed. Stakeholders indicated that it is difficult for victims to ask for help and any type of mistreatment screening would be helpful. On a 7-point Likert scale ranging

from “1=Very Comfortable” to “7=Very Uncomfortable”, older adults scored 2.8 on average for whether they would feel comfortable using a tablet to screen for EM. Some said digital screening would maintain privacy and anonymity. Stakeholders highlighted the need to explain community resources available to older adults once EM is disclosed, especially resources offering help to the caregiver. In summary, this qualitative study supported using tablet-based screening for EM and highlighted the need to target stigma related to EM disclosure and fear of retaliation.

#### PREVALENCE AND PERCEIVED USEFULNESS OF ASSISTIVE TECHNOLOGY IN MIND AT HOME DEMENTIA COHORT

Michael Morreale,<sup>1</sup> Deirdre Johnston,<sup>2</sup> Morgan Bunting,<sup>3</sup> Inga Antonsdottir,<sup>4</sup> and Quincy Samus,<sup>4</sup> 1. Johns Hopkins University, Swarthmore, Pennsylvania, United States, 2. Johns Hopkins Hospital, Baltimore, Maryland, United States, 3. Johns Hopkins University, Halethorpe, Maryland, United States, 4. Johns Hopkins University, Baltimore, Maryland, United States

Dementia is generally characterized by both an increasing dependence in activities of daily living over the course of the illness, and a decreasing ability to self-manage everyday tasks. This places persons at risk for a number of undesirable outcomes including increased risk for injury in the home, increased risk for medical and behavioral complications, risk of premature institutionalization, and excessive burden on family caregivers (CG).<sup>3,4</sup> Assistive Technology Devices (AT-Devices) could represent an efficient resource for supporting daily tasks while reducing both CG care burden and adverse risk to the person with dementia (PWD).<sup>3,4</sup> In the context of a larger dementia care intervention clinical trial (The MIND at Home program) that involved persons living with dementia at home and their family caregivers, we conducted a supplemental baseline survey on 59 participants and their CGs to better understand the current prevalence of AT-Device use and which devices would be perceived as “most helpful”. Our analysis showed that 51% of our study population used at least 1 of our listed AT-Devices. The most common AT-Device used at baseline were door guards (29%), tablets/smartphones (20%), and constant temperature shower nozzles (13%). Our survey demonstrated devices perceived as most useful included: shower nozzles, GPS locating devices, door guards, and Bluetooth tracking stickers. Individuals who endorsed African-American/Other race were significantly more likely to use at least one AT-Device than those who identified as Caucasian (OR: 4.80; 95% CI: 1.50-17.58). This significance was lost during adjustment for other demographic variables (sex, age, cohabitation status, and dementia severity).

#### TELEHEALTH USE IN A HOME-BASED DEMENTIA CARE-COORDINATION PROGRAM

Deirdre Johnston,<sup>1</sup> Melissa Reuland,<sup>2</sup> Kelly Marshall,<sup>3</sup> Inga Antonsdottir,<sup>4</sup> Morgan Bunting,<sup>5</sup> and Quincy Samus,<sup>4</sup> 1. Johns Hopkins Hospital, Baltimore, Maryland, United States, 2. Johns Hopkins University School of Medicine, Baltimore, Maryland, United States, 3. JHHCG, Baltimore, Maryland, United States, 4. Johns Hopkins University, Baltimore, Maryland, United States, 5. Johns Hopkins University, Halethorpe, Maryland, United States

In the coming decades, greater numbers of people will either have Alzheimer's Disease or a related dementia or will take care of a family member with dementia. The dementia syndromes are associated with increased risk of medical, social, and behavioral complications in both the person with dementia (PWD) and the caregiver (CG), many of which are preventable. These complications, and the dementia itself, can impede access to care and ultimately hasten residential care placement, which can be both undesirable and costly. A nearly universal unmet need in PWD/CG dyads is dementia-specific education. Therefore, it is vital we find ways to support and provide education to CG/PWD dyads to manage dementia in the community and home setting. MIND at Home is a dementia-care model developed and tested at Johns Hopkins University School of Medicine to minimize dementia complications and delay institutionalization by training non-clinical Memory Care Coordinators (MCCs) working under clinical supervision to support and guide PWD/CG dyads in the community. MCCs collaborate with CGs and PWDs in the community using an individualized care plan structured around the dyads' specific dementia-related needs. This presentation will describe how the MIND at Home team used handheld tablets to connect MCCs to clinicians from participants' homes, and will report on challenges encountered, strategies to address them, and participant and caregiver satisfaction with the telehealth experience.

#### USABILITY AND FEATURE EVALUATION OF THE AMAZFIT BIPS SMART WATCH IN THE PRECISION START LAB

Jo-Ana Chase,<sup>1</sup> Chelsea Howland,<sup>2</sup> Malaika Gallimore,<sup>3</sup> and Blaine Reeder,<sup>3</sup> 1. *University of Missouri, Columbia, Columbia, Missouri, United States*, 2. *University of Missouri - Columbia, Sinclair School of Nursing, Columbia, Missouri, United States*, 3. *University of Missouri, Columbia, Missouri, United States*

Interventions utilizing consumer-grade wearable and mobile devices may support older adult health and wellness. However, rapid technology change and short industry product release cycles limit timely incorporation of these devices. We developed a novel, multi-stage process to rapidly move from within-team evaluations to lab- and field-based participants studies based on small-sample technology testing methods from Human-Computer Interaction. We present findings from a first-stage evaluation of the Amazfit Bips smart watch for potential use in studies with older adults as part of the methodology validation. A four-person research team conducted evaluations using: 1) a wearables framework for user experience and feature availability; and 2) the System Usability Scale (SUS). Evaluators wore the watch seven days straight from the box. User experience checklists indicated high usability. However, corresponding comments identified challenges with downloading the mobile app, pairing the watch and phone, navigating watch and mobile interfaces, and privacy controls. Average SUS score was 65.6 indicating marginal usability (C grade). While meeting study goals, divergence in usability perceptions suggest the process could be improved by completing each set of instruments separately for the watch and mobile

app rather than all at once. Given failures in pairing, app navigation challenges, and small screen size, the Amazfit Bips may be best suited for studies among older adults with a high degree of technical proficiency. For those with little technical experience or high disease burden, training materials and dedicated training with support may be required. Future steps are lab- and field-based tests with older adult participants.

#### USABLE AND PRIVACY-ENHANCED TELEPRESENCE ROBOTS FOR OLDER ADULTS AGING IN PLACE

Xian Wu,<sup>1</sup> and Jenay Beer,<sup>2</sup> 1. *University of Georgia, Athens, Georgia, United States*, 2. *Institute of Gerontology, Athens, Georgia, United States*

Aging population is growing rapidly in the United States and people are living longer. Maintaining health and wellness while aging-in-place is crucial for older adults. Telepresence technology is beneficial for this target population to stay socially connected, as well as utilize telehealth and telemedicine services. However, such technology was not specifically designed for older adults. For older users to adopt telepresence, it is important to ensure that they do not experience adoption barriers, such as issues with usability and privacy. This research used a user-centered evaluation to design, develop, and test telepresence user interfaces (UI). Thirty older adults (aged 60+) participated in a within-subjects evaluation of two telepresence UIs: 1) the controlled condition - a generic UI, called Presence, based on currently available telepresence systems; and 2) the experiment condition - an enhanced custom telepresence UI that was designed follow human factors and design principles for older adults, named InTouch. Participants tested both UIs in a virtual home environment developed in Unity. Qualitative and quantitative results suggest that older adults perceived the experiment condition - InTouch, to be more usable and private - and our older users provided insight on which usability and privacy features were critical for them. By investigating the design of telepresence for older users, and applying those findings to design recommendations, we aim to improve the ease of use and privacy level of telepresence - not only for our target users but for all users who wish to enhance social connectedness and utilize telehealth.

#### USE OF GPS TRACKING TECHNOLOGY TO MEASURE MOBILITY IN OLDER ADULTS: A SYSTEMATIC REVIEW

Jane Chung,<sup>1</sup> Lana Sargent,<sup>1</sup> and Roy Brown,<sup>2</sup> 1. *Virginia Commonwealth University School of Nursing, Richmond, Virginia, United States*, 2. *Virginia Commonwealth University, Richmond, Virginia, United States*

Global positioning system (GPS) tracking technology is increasingly used in aging research to objectively measure the spatial and temporal aspects of mobility in older adults. The review aims to systematically synthesize the literature to identify GPS-driven mobility measures and potential determinants of mobility limitation for community-dwelling older adults. A systematic search of six electronic databases was conducted. A total of 4897 articles were found with 2578 left to review after deduplication. Twenty-five studies met inclusion criteria: 24 cross-sectional studies and one