

Health and fitness are contributing factors to physical resilience, or the ability to resist or recover from functional decline following health stressors. Accelerometer based activity monitors have been used in both the in-patient and outpatient setting to monitor mobility. While using sensors to track mobility is increasing, most clinical settings rely on patient reported outcomes. These measures often under or overestimate movement. The lack of a clinically meaningful way to measure mobility in the in-patient setting is a barrier to improving the mobility of hospitalized individuals. This is especially important when considering that over one-third of hospitalized older adults are discharged with a major new functional disability in performing activities of daily living. Our goal was to automatically determine if the subject is laying, reclining, sitting, standing, and walking to better reflect actual activity. Other platforms and studies indicate the ability to determine a difference in activity vs. inactivity or laying and reclining vs. standing and walking, but not all five phases of movement defined here. The aim of this study was to use accelerometer data to train a machine learning algorithm to automatically classify the postural changes (i.e. laying, reclining, sitting, standing, and walking). Preliminary results demonstrate that our trained algorithm is overall 95% accurate in determining each position from unlabeled data from the subject population. Additionally, this algorithm will be applied to in-patient hospitalized older adults for tracking of positions throughout the day.

#GERIATRICS: AN ANALYSIS OF THE IMPACT OF THE GERIATRICS TWITTER NETWORK

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Twitter connects an international community of healthcare stakeholders, potentially augmenting access to information related to geriatric medicine. The purpose of this study is to analyze the geriatric medicine Twitter network, and we hypothesize this community has substantially grown in the last six years. We analyzed all publicly available tweets including the hashtag #geriatrics from January 1, 2013-January 1, 2019 using Symplur Signals, a health care social media analytics platform. We evaluated #geriatrics metrics over time related to activity, content analysis, user characteristics, engagement, and network analysis. A total of 159,008 tweets (containing 42.8% re-tweets) with the hashtag #geriatrics were written by 29,443 users, resulting in 393.6 million impressions. The number of tweets increased from 9,705 in 2013 to 39,151 in 2018 (32.2% compound annual growth); users increased from 3,366 in 2013 to 29,443 in 2018 (55.3% compound annual growth). Users were primarily found in the United States, United Kingdom, and Canada. The most commonly trending topic from 2013-2015 and from 2016-2018 was 'older adults'. The top hashtags included in tweets with #geriatrics were #job, #aging, and #hpm (hospice and palliative medicine). Network analysis showed central hubs to be medical journals, provider organizations, individual physicians, and individual advocates. The top 150 influencers consisted primarily of physicians (49.1%), advocate/support organizations (13.8%), and media organizations (6.3%). The use of Twitter to promote geriatric medicine using #geriatrics has

matured into an international digital community of interest. Future studies should examine hashtags related to age prevalent illnesses and hashtags likely to be used by patients.

ALEXA, ASSESS MY MEMORY: THE FEASIBILITY OF EXTENDED HEALTH MONITORING IN AN OLDER-ADULT-LIVING COMMUNITY

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The goal of most older adults is to live independently in their own homes, for as long as possible. There are many advantages to aging in place for the individual, but also challenges as changes in cognitive and physical health can occur over time. Especially for older adults living alone, tracking these changes is critical for early intervention and prevention. The relatively easy availability of consumer technology may provide one mechanism for monitoring older adults in their homes. We designed a pilot study to test the feasibility and acceptability of using wearable sensors (Fitbit sensors), in conjunction with automated interactive voice recognition technology (Amazon Echo), to monitor older adults' physical and cognitive health during daily activities. Participants (7 females, 2 males; 65-80 years of age) were recruited from a housing complex for older adults with low income. They were interviewed about health monitoring technology before and after a 2-week measurement period during which they were expected to wear the Fitbit daily and interact with the Amazon Echo for 8 consecutive days. Feasibility challenges included limited skill in Echo interactions, remembering to do the assessments, and charging/uploading Fitbit data. Qualitative analysis of interviews revealed generally positive attitudes about technology, but low comfort operating the devices. These preliminary findings suggest that with additional training for older adults, sensors and voice recognition technologies could have significant roles in maintaining older adult quality of life by contributing to early detection of decline and timely intervention.

NURSING HOME TELEED INTERVENTION: ADVANCING NEW CARE MODELS

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New reimbursement and managed care models demonstrate the need to reduce avoidable Emergency Department (ED) use and limit preventable inpatient admissions for older adults in Skilled Nursing Facilities (SNF). The objective was to develop an ED telemedicine consultation intervention for SNF residents with acute medical problems. Secondary objectives including evaluation of health care utilization, provider satisfaction. Demonstration evaluation in three urban SNFs, telemedicine linked to university medical center ED. Mobile telemedicine cart equipment assessed SNF residents for any change in condition. ED physicians used

tablets with secure access to conduct the resident assessment. Provider satisfaction measures imbedded in EMRs were completed at consultation visit end. 460 patients had changes in condition, 327 resulted in 911 calls, 85 deemed eligible for telemedicine consult. Conducted 57 telehealth consults. Forty (70%) telemedicine consult residents remained in the SNF. Fourteen residents were transferred to the ED. Average satisfaction scores were 5.8/7 for SNF nurses (n=49) and 5.6 for ED physicians (n=45). Lower-rated items related to technical equipment problems. ED physicians reported residents transferred to ED after telehealth visit had better continuity of care. The intervention was effective in preventing or delaying transfer of acutely ill, medically complex SNF residents. Implementation of the intervention identified need for SNF admission policy and procedure changes; weekly telemedicine training; SNF clinical advocates; on-site tracking and linkage of EMRs across providers; HIPAA shared medical record concerns. Future research plans include analyses of detailed SNF resident characteristics and business case assessment for reduction of transfers, ED and hospital utilization.

DOES WEARING AUGMENTED-REALITY GOGGLES AFFECT OLDER ADULTS' KINEMATICS DURING GAIT?

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Virtual-reality (VR) testing can cause motion sickness and impair safety, especially for older adults, but augmented-reality (AR) may allow the testing of holograms embedded into a mixed-reality environment without the VR impediments. However, wearing AR goggles may affect the way people walk, but this possibility has not been tested. The objective of this study was to evaluate if wearing AR goggles during gait would affect the kinematics of older adults. Ten older adults (68±5 years), who could walk without assistive devices, participated in this study. The participants walked outdoors in a public park with and without the AR goggles. The participants were instrumented inertial movement units to track their kinematics (MTw Awinda trackers, Xsens Technologies B.V., Enschede, the Netherlands). The goal of the study was to assess if simply wearing the goggles would affect gait, therefore no holograms were displayed. Ten gait cycles were analyzed and the mean of each subject was used to compare the joint kinematics between the conditions (with vs without goggles) using T-tests in SPSS 18. The foot, ankle, knee and hip angles were not different between the

conditions ($p>0.05$), but there were significantly less trunk flexion at 44% of the gait cycle ($p=0.035$) and less forward head flexion throughout the gait cycle ($p=0.023$) when the participants were wearing the goggles vs. when they were not. The findings indicate that wearing AR goggles changed the trunk and head posture cycle, but did not affect the lower limb kinematics during gait.

HOME-BASED TRANSCRANIAL DIRECT-CURRENT STIMULATION AND EXPERIMENTAL PAIN SENSITIVITY

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Osteoarthritis (OA) of the knee is one of the most common causes of pain in older adults. Clinic-based transcranial direct current stimulation (tDCS) is a noninvasive brain stimulation technique that has been shown to reduce pain, but no published studies have reported using home-based self-administered tDCS in older adults with knee OA. Thus, the purpose of this study was to examine the effect of home-based tDCS on experimental pain sensitivity in older adults with knee OA. Twenty community-dwelling participants aged 50–85 years with knee OA pain received ten daily sessions of 2 mA tDCS for 20 minutes at home. A multimodal quantitative sensory testing battery was completed, including heat pain tolerance, pressure pain threshold, and punctate mechanical pain. Participants (75% female) had a mean age of 61 years, and a mean body mass index in the sample was 28.33 kg/m². All 20 participants completed all ten home-based tDCS sessions without serious adverse effects. The Wilcoxon Signed-Rank test showed that all the differences between the baseline measurements and experimental pain sensitivity measurements after 10 sessions were statistically significant. Effect sizes (Rosenthal's R) were R = 0.35 for heat pain tolerance (P = 0.02), R = 0.40 for pressure pain threshold (P < 0.01), and R = 0.32 for punctate mechanical pain (P = 0.02). We demonstrated that home-based self-administered tDCS was feasible and reduced experimental pain sensitivity in older adults with knee OA. Future studies with well-designed randomized controlled trials are needed to validate our findings.

VETCONNECT: A VA TELEHEALTH PROGRAM PROVIDING TREATMENT, EDUCATION AND TRANSITIONS OF CARE TO NURSING HOME VETERANS

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Transporting nursing home Veterans to hospitals for outpatient care can present many challenges, including lengthy time in transit, coordination difficulties between the hospital and nursing home, and travel burden on Veterans. In June 2017, the VetConnect program began offering Veterans in Colorado residing in Department of