target. Secondary analyses from the Fam-FFC study describe the incidence and pharmacologic management of pain, and its association with physical function, delirium, and behavioral and psychological symptoms of dementia (BPSD). The sample (N=299) was mostly female (62%), non-Hispanic (98%), and Black (53%), with a mean age of 81.6 (SD=8.5); 166 (56%) received pain medication, whereas 40% (n=43) of 108 individuals who demonstrated pain did not receive analgesics. Regression analyses showed that, controlling for age, gender, cognition, and comorbidities, pain was associated with function (t = -.3.2, p=.001), delirium (t = 5.0, p < .000), and BPSD severity (t = 2.3, p=.023). Findings suggest pain may be undertreated in hospitalized PWD but should be considered to optimize function, decrease delirium, and prevent or decrease BPSD.

PHYSICAL ACTIVITY IN HOSPITALIZED PERSONS WITH DEMENTIA: FEASIBILITY AND VALIDITY OF THE MOTIONWATCH 8

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Interventions to prevent functional decline in hospitalized persons with dementia (PWD) require objective measures of physical activity (PA). This secondary analysis described PA using MotionWatch 8 actigraphy and considered the feasibility and validity of the MotionWatch 8 in hospitalized PWD. In the first 320 PWD enrolled in the Fam-FFC study, 261 agreed to wear a MotionWatch for 24 hours within 48 hours of admission. Minutes were recorded in sedentary (x̄ =1767.35, SD=1327.43), low (x̄ = 202.52, SD=127.78), moderate (x̄ =7.93, SD=25.80), and vigorous activity (x̄ = .85, SD=4.50). Controlling for age, gender, race and comorbidity, counts of activity were significantly associated with ADL function (t=4.3, p<.001). Sedentary (t=-3.9, p<.001), low (t =2.8, p =.006), and moderate (t = 3.0, p =.003) activity, but not vigorous activity were significantly associated with ADL function. MotionWatch 8 appears feasible and valid when evaluating PA among hospitalized PWD.

A COMPARISON OF SYMPTOMS IN HOSPITALIZED AFRICAN AMERICAN AND WHITE PERSONS WITH DEMENTIA

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There exist significant race disparities in the prevalence of dementia, with black persons with dementia (PWD) showing higher co-morbidity and more frequent hospitalizations, yet little is known how clinical presentations compare. This study compared physical function, delirium, depressive symptoms, and behavioral and psychological symptoms of distress (BPSD) in black and white PWDs when hospitalized. A multivariate analysis of covariance showed that, controlling for age, gender, cognitive status, and comorbidities, black PWD had more delirium (mean= 3.8, SD= 2.9) as compared to white PWDs (mean=2.4, SD= 2.2, F=4.8, p =.029). Additionally, black PWD had more depressive symptoms (mean= 11.7, SD= 6.7) as compared to white PWD (mean = 9.0, SD= 5.2, F=6.6, p =.011), and less improvement in functional status admission to discharge (mean =12.4, SD= 18.9) as compared to white PWD (mean=17.8, SD=18.8, F=12.3, p<.001). There were no differences in BPSD. Continued research examining factors influencing differences in race cohorts is warranted.

SESSION 7090 (SYMPOSIUM)

LARGE-SCALE MEASUREMENTS OF PHYSICAL ACTIVITY WITH WEARABLE DEVICES: AN INTERNATIONAL PERSPECTIVE

Chair: Jacek Urbanek
Co-Chair: Jennifer Schrack
Discussant: David Roth

In recent years the popularity and application of both research- and consumer-grade wearable physical (PA) activity monitors have witnessed substantial growth in large observational studies and clinical trials. For example, the NHANES and UKBiobank, have collected accelerometry data on thousands of participants contributing to the reputation of wearable technology overall as well as in aging-oriented research. As a result, more aging-focused studies including the Baltimore Longitudinal Study of Aging, Maastricht Study, Finnish Retirement and Aging study, and the National Health and Aging Trends Study, along with clinical trials have introduced accelerometry protocols into their design. The symposium focuses on challenges in the implementation of the objective measurements of PA into large studies on older adults. We will discuss the design of successful projects held and/or completed in the United States and Europe including: (1) types of devices, (2) size of datasets, (3) steps necessary for the successful device implementation, (4) data management and (5) statistical analyses. We will also present primary, PA-related findings in each study, together with funded or planned follow-up work. Collectively, these presentations will improve understanding of the technology and effort necessary for the successful application of objective PA monitoring and the resulting data analysis, providing a better context for investigators in the field of aging who want to introduce wearable devices into existing and upcoming research. The discussion will focus on the future of these technologies in the context of geriatric medicine and gerontology and the consequent steps essential for their best utilization and further expansion.

THIGH-WORN ACCELEROMETER DATA IN THE MAASTRICHT STUDY

Annemarie Koster, Maastricht University, Maastricht, Limburg, Netherlands

This study describes the use of thigh-worn accelerometers to collect high-quality data on sedentary time and physical activity in the Maastricht Study, a prospective cohort study in the Netherlands. Data have been collected in 9000 participants, aged 40-75 years, 49% women, and 25% has type 2 diabetes by design. All participants were asked to wear an
activPAL accelerometer for 7 days. Percentage sedentary, standing and stepping time of waking time were calculated. Participants had on average 6.4 valid days (≥14h of monitoring) and 90% wore the device >4 days. Men spent significantly more time sedentary than women (63.3±10.3% versus 57.0±10.1%); standing and stepping time were significantly higher in women (30.1±7.9%; 12.9±4.4%) than in men (24.7±7.4%; 12.1±4.6%). Sedentary time significantly increased with increasing age while standing time decreased; no clear age-gradient in stepping time was found.

MULTI-SENSOR MEASUREMENT OF PHYSICAL BEHAVIOR IN THE FINNISH RETIREMENT AND AGING STUDY
Sari Stenholm, University of Turku, Turku, Finland
Retirement is a life transition that is accompanied by changes in time use and removal of work-related exposures. The Finnish Retirement and Aging study (FIREA) was established in 2013 to examine changes in 24-hour physical behavior, lifestyle factors, health and functioning by following aging workers annually from full-time work to retirement. FIREA activity substudy includes 1200 participants (mean age 63.2 years, 85% women) and their physical behavior has been measured annually with multiple accelerometers (wrist ActiGraph, thigh Axivity and hip SenseDoc including GPS). The mean number of measurement days is seven at each measurement wave with a valid wake wear time 16.0 hours before retirement and 15.6 hours after retirement. Currently, information is available from 3-5 measurement waves. Transition to retirement induced changes in 24-h physical behavior towards increased sleep and less physical activity among women, especially in those retiring from manual occupations.

SESSION 7095 (SYMPOSIUM)

NUTRITIONAL MEDIATORS OF CELLULAR DECLINE AND MITOCHONDRIAL DYSFUNCTION IN OLDER ADULTS
Chair: Roger Fielding
Aging is the primary risk factor for progressive loss of function, onset of disease, and increased vulnerability to negative health-related outcomes. These clinical manifestations arise from a decline in mitochondrial and metabolic processes considered the hallmarks of aging. Collectively, these changes can be defined as age associated cellular decline (AACD) and are often associated with signs and symptoms such as fatigue, reduced strength and low physical activity. This symposium will explore mechanisms, clinical signs, and emerging nutritional interventions for AACD. Dr. Feige's presentation will serve as an introduction by highlighting mechanisms underlying functional declines in skeletal muscle with aging. He will discuss the Multi-Ethnic Molecular determinants of Sarcopenia (MEMOSA) study, which found impaired mitochondrial bioenergetic capacity in skeletal muscle of older adults with sarcopenia compared to age-matched controls, and identified mitochondrial function as a key target for intervention. Dr. Guralnik will discuss the connection between cellular changes and clinical manifestations of AACD. He will report on an expert consensus study group which developed an initial framework to identify self-reported symptoms and observable signs of AACD in adults over 50 years. Lastly, Dr. Singh will discuss the evidence for nutritional interventions to address sources of AACD, focusing on those targeting mitochondrial dysfunction. Recent research on dietary interventions with urolithin A (an activator of mitophagy) and nicotinamide riboside (an NAD+ booster) will be reviewed. Overall, this symposium will highlight key mechanisms and clinical signs of AACD, and the potential for novel nutrition interventions to support cellular function and healthy aging.

EARLY DETECTION OF AGE-ASSOCIATED CELLULAR DECLINE: REPORT OF AN EXPERT CONSENSUS
Jack Guralnik,1 Matteo Cesari,2 Ariel Beresniak,2 Leocadio Rodriguez-Manas,4 and Antonio Cherubini,5 1. University of Maryland School of Medicine, Baltimore, Maryland, United States, 2. University of Milan, Milan, Lombardia, Italy, 3. Data Mining International, Geneva, Geneve, Switzerland, 4. University Hospital of Getafe, Getafe, Madrid, Spain, 5. INRCA, Ancona, Marche, Italy
Cellular processes often decline with age and cells lose their ability to function optimally, which may lead to organ-specific dysfunction and the development of systemic age-related diseases. The cellular hallmarks of aging are associated with clinical signs and symptoms and can be termed Age Associated Cellular Decline. An expert consensus study group was convened to provide an initial framework for the development of a tool for adults over 50 years old, which identifies self-reported symptoms and observable signs likely to be early and/or surrogate markers of age associated cellular decline. A total of 16 potential early signs and symptoms of age associated cellular decline were identified and need to be validated in further research.

NUTRITIONAL STRATEGIES TO COUNTERACT MITOCHONDRIAL DYSFUNCTION AND NAD+ DEFICIENCY IN HUMAN SARCOPENIA
Jerome Feige, Nestlé Research, Lausanne, Switzerland
The causes of impaired skeletal muscle mass and strength during aging are well-studied in healthy populations. Less is known on pathological age-related muscle wasting and weakness termed sarcopenia, which directly impacts physical autonomy and survival. We compared genome-wide transcriptional changes of sarcopenia versus age-matched controls in muscle biopsies from 119 older men of different ethnicity. Individuals with sarcopenia demonstrate a prominent transcriptional signature of mitochondrial bioenergetic dysfunction in skeletal muscle, with low PGC-1α/ERRα signalling, and downregulation of oxidative phosphorylation and mitochondrial proteostasis genes. These changes translate functionally into fewer mitochondria, reduced bioenergetic activity, and NAD+ deficiency in sarcopenic muscle. Our results point to mitochondrial homeostasis as a key mediator of pathological muscle aging. Novel nutritional solutions enhancing muscle strength and performance by enhancing mitochondrial function are being tested clinically and will be reviewed. These include activating mitophagy with Urolithin A or restoring NAD+ levels via tryptophane/kynurenine or with nicotinamide riboside.

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