dressing, walking across the room, and getting in/out of bed. We included 24 social factors from five categories (economic stability, neighborhood environment, education, community/social context, and healthcare system) and used forward stepwise regression to screen for important ones. Polysocial score was created using 13 social factors and was classified as low (0-19), intermediate (20-30), and high (31+). We used the multivariable Poisson regression to estimate the risk of incident disability by three polysocial score categories and evaluate the interaction between race/ethnicity (non-Hispanic Whites and Others) and the polysocial score. A higher polysocial score is associated with a lower disability risk among non-Hispanic Whites and Others. We found an additive interaction between race/ethnicity and polysocial score categories. In the low polysocial score group, non-Hispanic Whites had a 4.7% lower risk of disability than the Others, while the difference significantly reduced to 2.4% and 2.6% in the intermediate and high polysocial score group, respectively. The polysocial score approach offers a new opportunity to explain the racial/ethnic disparities in functional capacity among older adults.

GROUP-BASED TRAJECTORY MODELING OF NURSING HOME RESIDENT PAIN SCORES

Connie Cole1, Susan Hickman2, Justin Blackburn1, Janet Carpenter2, and Chen Chen1. 1. University of Colorado Anschutz Medical Campus, Denver, Colorado, United States. 2. Indiana University School of Nursing, Indianapolis, Indiana, United States.

Up to 80% of older adults living in a nursing home (NH) experience pain and up to 32% have substantial pain. Pain in NH residents is associated with poor quality of life, higher likelihood of depression, and decreased life satisfaction. Pain in NH residents has often been studied using a cross-sectional approach, which fails to consider the temporal nature of pain. Therefore, the purpose of this analysis was to identify and characterize clinically meaningful, dynamic pain trajectories in NH residents using data from the Minimum Data Set. A retrospective longitudinal analysis was conducted using group-based trajectory modeling with pain scores from admission to discharge or a maximum of 28 assessments. We identified four distinct trajectories: 1) consistent pain absence (48.9%), 2) decreasing-increasing pain presence (21.8%), 3) increasing-decreasing pain presence (15.3%), and 4) persistent pain presence (14.0%). Relative to residents’ in the consistent pain absence trajectory, the likelihood of being in the persistent pain presence trajectory was more than twice as high for those living in a rural versus (AOR 2.7, CI 2.2-3.4, p<.001), over 4 times higher for those with hip fracture (AOR 4.3 CI 2.6-7.0, p<.001), nearly 3 times higher for those with a fracture other than hip (AOR 2.9, CI 2.0-4.1, p<.001), and almost twice as high for those with contracture (AOR 1.7, CI 1.4-2.1, p<.001). Using residents’ characteristics associated with persistent pain such as hip fracture or contracture may improve care planning based on early identification or risk stratification and can improve mitigation of persistent pain.

RACE AND ETHNIC DIFFERENCES IN PHYSICAL ACTIVITY, OSTEOPENIA, AND OSTEOPOROSIS: RESULTS FROM NHANES

Elizabeth Vasquez1, Md Towfiqul Alam2, and Rosenda Murillo3. 1. Albany University (SUNY), Rensselaer, New York, United States. 2. University of North Carolina at Greensboro, Greensboro, North Carolina, United States. 3. University of Houston, Houston, Texas, United States.

Introduction: Osteopenia and osteoporosis are common age-related disorders with enormous health and economic consequences to older adults and society. Physical activity (PA) is an important modifiable risk factor for bone mineral density (BMD). This study aims to determine whether current physical activity is related to osteopenia and osteoporosis (based on BMD) in a racial/ethnically diverse sample of older adults.

Methods: Femoral bone BMD data from the National Health and Nutrition Examination Survey (NHANES 2009-2010, 2013-2014, 2017-2018) was obtained for 3,331 adults 60-80 years old. Self-reported PA was categorized into high, moderate, and low. Linear regression models that accounted for the complex survey design of NHANES examined the association between PA and BMD for each race/ethnic group.

Results: Non-Latino blacks (blacks) and Latinos reported low levels of PA when compared to Non-Latino whites (whites) (40.7%, 38.2% and 32.4% respectively; p<.0001). Further, blacks and Latinos had a lower prevalence of osteoporosis (5.6%, 6.4% and 9.0% respectively; p< 0.0001), but have similar prevalence of normal BMD and osteopenia categories when compared to whites. There was a 0.03 g/cm2 difference in BMD between those in the high PA versus the low PA (p< 0.0001).

Conclusion: Our findings indicate that despite lower levels of activity, black and Latino older adults were less likely to have osteoporosis. High levels of activity were significantly associated with higher BMD after controlling for confounders. Considering the prevalence and burden of osteopenia and osteoporosis and projected increases of the older population we need more research evidence supporting the role of PA.

TESTING THE MODERATING EFFECTS OF DEPRESSIVE SYMPTOMS ON A PHYSICAL ACTIVITY INTERVENTION

Emily Smail, Christopher Kaufmann, and Todd Manini, University of Florida, Gainesville, Florida, United States.

Depressive symptoms affect the physical and cognitive health of approximately 20% of older adults. These symptoms have strong, bidirectional ties with physical activity levels and mobility disability. Physical activity has a positive impact on mood and depression and is highly recommended for symptom management across all ages. However, it’s unclear whether elevated depressive symptoms interfere with potential benefits that physical activity has on other health outcomes like mobility loss. The Lifestyle Interventions and Independence for Elders (LIFE) Study randomized over 1,500 older adults (aged 70+) to either a physical activity (intervention) or successful aging (control) program with an average of 2.2 years of follow-up. Our analysis used Cox proportional hazards models to evaluate whether elevated depressive symptoms (measured using the Center for Epidemiological Studies-Depression (CESD)-11 scale with a cutoff score of 16/22 points) moderated the relationship
between intervention status and the primary outcome (incident major mobility disability, objectively measured as the ability to walk 400 meters). In a secondary analysis of 1,534 older adults (Mage = 78.8, 66.7% female), we confirmed significant main effects of both the physical activity intervention and elevated depressive symptoms on incident major mobility disability but found no evidence of moderation (interaction p-value=0.989). Results indicate that the benefits of the intervention were comparable between those with and without significant depressive symptoms at baseline, supporting the inclusion of individuals with depression in clinical trials. In addition to potential symptom relief, promoting physical activity in older adults with depression is important for protecting against mobility loss.

SESSION 2180 (BIOLOGICAL SCIENCES INVITED SYMPOSIUM)

PRESIDENTIAL SYMPOSIUM: NUTRITION, METABOLISM, AND AGING
Chair: Rozalyn Anderson

Aging is associated with increased risk for a host of non-communicable diseases and disorders including diabetes, cardiovascular disease, cancer, and neurodegeneration. Although the underlying basis for this shared risk as a function of aging is not known, numerous diseases of aging have an established metabolic component. Data from preclinical and basic research indicate that the pace of aging is malleable, and studies in short-lived species have shown the ability of genetic and nutritional interventions to not only positively impact longevity but also to prolong health into older age. This symposium, “Nutrition, Metabolism, & Aging”, features internationally renowned aging research scientists whose work focuses on how nutrition and metabolism intersect with aging biology. We will hear from John Speakman from the University of Aberdeen who will present his research on “Metabolism and Extended Longevity”; Leanne Redman from the Pennington Biomedical Research Center whose work in humans will be described in her talk on “Dietary Interventions for Healthy Aging”; Holly Brown-Borg from University of North Dakota will discuss endocrine modulation of aging in her talk “Somatotropic Signaling in Health and Longevity”; and Valter Longo from the University of Southern California who will discuss the latest findings from his research in mice and humans in his talk “Periodic Fasting in Aging and Disease”. Attendees will learn about nutrition and metabolism and how these cues are interwoven to regulate aging, impact health, and enhance longevity.

DIETARY INTERVENTIONS FOR HEALTHY AGING

Holly Brown-Borg, University of North Dakota, Grand Forks, North Dakota, United States

The endocrine system is highly integrated and regulates growth, reproduction, metabolism, and stress responses that influence aging. Reduced growth hormone (GH) signaling extends health and lifespan in part, by altering metabolism maintaining enhanced insulin sensitivity and defense mechanisms. Diet composition affects metabolism and GH status integrates these nutrient signals, modulating metabolic responses that result in age-related disease susceptibility. Two pathways affected by somatotropic signaling include methionine and lipid metabolism. GH appears to regulate oxidative defense and the methionine pathway via enzymes that affect S-adenosyl-methionine, glutathione, DNA methylation, and detoxification activities. We also have evidence that GH deficient mice escape fatty liver disease when fed high-fat diets. Together our work and others indicate that GH plays a significant role in an organism’s ability to respond to nutrients and cellular stressors by regulating factors that counter stress, modulating metabolic responsiveness to nutrients, and detoxification of endogenous and exogenous compounds.

PERIODIC FASTING MIMICKING DIET, LONGEVITY, AND DISEASE

Valter Longo, Leonard Davis School of Gerontology, Los Angeles, California, United States

Chronic dietary interventions have been known for decades to help prevent disease and extend longevity, yet most are difficult to adopt especially long-term. Brief periods of a diet that mimics fasting by regulating key starvation response genes including IGF-1, TOR-S6K and PKA lasting between 4 and 7 days and followed by long periods on a normal diet, are emerging as potentially effective pro-longevity interventions. These periodic fasting mimicking diets (FMD) provide low calories, sugars, and proteins and high levels of unsaturated fats. In mice, 4 day bi-monthly cycles of the FMD started at middle age extend longevity, reduce tumors by nearly 50%, reduce inflammatory diseases and increase cognitive performance at old ages. In humans, 3 monthly cycles of a 5 day FMD reduce markers or risk factors for aging, diabetes, cancer and cardiovascular disease including cholesterol, blood pressure, CRP, IGF-1, and fasting glucose, particularly in subjects with elevated levels of these markers at baseline. Here I will present our most recent mouse and clinical studies indicating that FMDs can help reverse insulin resistance, reduce risk factors/markers of aging and age-related diseases, and lower biological age.

DIETARY INTERVENTIONS FOR HEALTHY AGING

Sai Krupa Das1, Leanne Redman2, 1. Tufts University, Boston, Massachusetts, United States
2. Pennington Biomedical Research Center, Baton Rouge, Louisiana, United States

Aging is associated with a host of cellular and molecular changes that cumulatively result in a progressive decline in metabolic and physical function, development of chronic disease, and increased risk of mortality. Dietary interventions targeting these age-related changes have been shown to attenuate the aging process and improve healthspan, i.e., the length of time individuals are disease- and disability-free. Calorie restriction (CR) is one such intervention that has been shown to be effective in reducing disease risk and improving multiple markers of biological aging. The biological mechanisms mediating the observed benefits of CR are not fully understood but possibly involve changes in energy metabolism, oxidative damage, insulin sensitivity, inflammation, and function of both the neuroendocrine and sympathetic nervous systems. Despite the benefits of CR, sustained adherence remains a challenge. An alternative dietary approach