ASSOCIATIONS OF GAIT CHARACTERISTICS AND VARIABILITY WITH WALKING EFFICIENCY IN OLDER ADULTS

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Higher energetic cost of walking per unit distance has been linked to many adverse health outcomes in older adults. Aging-related changes in gait characteristics have been postulated to contribute to energetic inefficiency, but previous studies focused on younger adults, and/or examined only a few gait characteristics. In the Baltimore Longitudinal Study of Aging, 507 older adults ≥50 years (72.3±9.8 years, 48.3% women, 48.3% black) without stroke and Parkinson disease had concurrent measurements of usual-paced gait characteristics using 3D motion analysis and energetic cost of walking using indirect calorimetry during a 2.5-min usual-paced overground walk. We tested the associations of the mean and the coefficient of variance (CV) of cadence (steps/min), swing time (ms), double support time (ms), stance time (ms), step time (ms), step length (cm), and step width (cm) with energetic cost of walking using linear regression models, adjusting for demographics, body composition, comorbidities, and gait speed. We found that a 5-cm shorter step length was associated with 0.40 ml/kg/100m higher cost of walking (p<0.001). A 1% higher CV in swing time and 1% lower CV in step width was associated with 0.152 ml/kg/100m higher (p=0.044) and 0.023 ml/kg/100m lower (p=0.022) cost of walking, respectively. Our results suggest that mean step length and variability in swing time and step width could potentially contribute to the rising cost of walking in older adults. Future longitudinal studies are needed to understand whether changes in gait variability can predict increased energetic cost of walking and can be intervened to preserve energy efficiency.

STAIR CLIMB TIME AND FUNCTIONAL POWER ASSOCIATIONS TO MUSCLE FUNCTION AND PHYSICAL PERFORMANCE

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Repeated stair climbing assesses sustained performance and neuromuscular components of movement, including functional muscle power (force×velocity). However, repeated stair climb associations to standard muscle and physical function measures are not established in older adults. We hypothesized that stair climb time (sec), and ascend power (peak and average; Watts=W) over 3 stair climb laps were associated with standard muscle function, physical function and risk factors in the Study of Muscle, Mobility and Aging (SOMMA; preliminary baseline N=455; 76.9±5.3 years; 58.0% women; 85.7% White). Adjusting for age, sex, race, and BMI using multivariate linear regression, stair climb time, peak power and average power were significantly associated with all standard muscle (Keiser leg press 1-RM strength and power; grip strength) and physical function (400m walk speed, SPPB and components) measures. Women had worse stair climb performance vs. men (all p<0.01) including: longer total time (29.6+/−8.1 vs. 27.4+/−6.7 sec), lower peak power (121.9+/−34.5 vs. 161.4+/−39.0 W), and lower average power (94.9+/−24.3 vs. 124.1+/−28.4 W). Adjusting for age, sex, race, BMI, CHAMPS total physical activity/week, CES-D depressive symptoms, and comorbidity count using multivariate linear regression, older age was related to slower stair climb time and lower peak/average power. Other known risk factors were also associated with worse stair climb performance: non-White race (average power only), lower physical activity (peak/average power only), BMI, depressive symptoms, and higher comorbidity (time only). Repeated stair climb time and power may capture unique aspects of functional decline with aging and are associated with standard muscle and physical function measures.

TILT TEST TOLERANCE AFTER TWO-WEEKS BED REST IN OLDER ADULTS IS NOT PROTECTED BY DAILY AEROBIC AND RESISTANCE EXERCISE

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Bed rest is associated with increased risk of orthostatic intolerance on return to upright posture and, at least in young adults, regular exercise during bed rest is proposed as protective. 22 older adults (55–65 years, half women) participated in a randomized trial with 14-days of continuous 6-degree head-down bed rest. Half completed 60 min/day of aerobic and high-intensity interval cycling plus resistance exercises (Ex) while the other half were control (Con). A passive 80-degree head-up tilt (HUT) to a maximum of 15-min assessed orthostatic tolerance while cardio- and cerebrovascular responses were monitored to a pre-syncopal level of systolic blood pressure < 90 mmHg. In pre-bed rest baseline, all but 3 women (Ex) completed 15-min HUT. After 14-days bed rest, only 3 men (1 Ex) and 1 woman (Ex) completed 15-min with no differences in tolerance between men and women or Ex and Con. Vasovagal syncpe presented in 5 participants (2 M-Con, 1 M-Ex, 1 F-Con, 1 F-Ex), most other non-finishers had progressive reduction in stroke volume without adequate vasoconstriction. Reductions in cerebral blood velocity measured during HUT by Doppler ultrasound revealed strong linear relationships to both end-tidal PCO2 and mean arterial pressure across all participants. These data indicate that neither older men nor older women were protected from orthostatic intolerance by 60-min per day exercise including high-intensity interval training. These data contrast with previous findings in younger adults in controlled trials of bed rest pointing to the need for greater
understanding of mechanisms regulating blood pressure and brain blood flow.

SESSION 4130 (SYMPOSIUM)

PRESIDENTIAL SYMPOSIUM: RACIAL AND ETHNIC HEALTH DISPARITIES ACROSS THE LONG-TERM SERVICES AND SUPPORTS CONTINUUM: NEED FOR POLICY AND ACTION

Chair: Debra Dobbs Discussant: Larry Polivka

The pandemic further exacerbated racial and ethnic health disparities with BIPOC (Black, Indigenous and People of Color) communities experiencing significantly higher infection rates and higher hospitalization rates compared to White populations. Underlying medical conditions that disproportionately affect BIPOC populations (e.g., cardiovascular disease, diabetes, COPD) and social determinants of health (income, community and environmental factors, access to health care and job security) can account in large part for increased rates of morbidity and mortality. Within the long term services and supports (LTSS) continuum, health disparities exist in both who receives and provides care. The four papers in this Social Research Policy and Practice Presidential Symposium will highlight factors that result in health disparities across the LTSS continuum and propose possible policy and practice solutions to address the disparities. The first paper presented will be an overview of existing nursing home workforce issues that continue to impact disparities in the quality of resident care. The second paper presented examines nursing home resident quality of life disparities from a measurement perspective. The third paper will highlight issues on elder abuse and mistreatment of rural elders, American Indian and Alaskan Natives. The fourth paper will present recommendations from key stakeholders of the RAISE Family Caregiving Advisory Council on how to meet the needs of underrepresented groups (AAPI, BIPOC, Indigenous peoples) of family caregivers. Policy and practice solutions to reduce disparities will be discussed.

REBUILDING THE NURSING HOME WORKFORCE: A TIME FOR CHANGE

Louisa Holaday¹, and Jasmine Travers², ¹Icahn School of Medicine at Mount Sinai, New York, New York, United States, ²New York University, New York, New York, United States

The COVID-19 pandemic magnified several long-standing problems in nursing homes, including issues within the nursing home workforce. Issues include staffing shortages, high turnover, low pay, inadequate training, poor treatment and limited access to resources. Research suggests that workforce issues of these kinds have the potential to significantly threaten and further increase disparities in the quality of care for nursing home residents. Thus, solutions are needed that ensures the nursing home workforce receives adequate investment so that these critical personnel are able to more effectively do the work that they do. In this presentation, workforce issues salient within the nursing home setting will be elaborated and potential solutions to mitigating these issues will be discussed.

MECHANISMS TO ADDRESS RACIAL/ETHNIC DISPARITIES IN NURSING HOME QUALITY OF LIFE

Tetyana Shippee, University of Minnesota, Minneapolis, Minnesota, United States

Evidence documents racial/ethnic disparities in access, quality of care, and quality of life (QoL) among nursing home (NH) residents who are Black, Indigenous and persons of color. Yet, little is known about mechanisms for these disparities. This presentation examines the mechanisms for racial/ethnic disparities in QoL in high-proportion BIPOC facilities while highlighting variability in QoL disparities across these facilities. The presentation uses data from a 5 year mixed-methods project involving 96 resident interviews; 61 staff interviews; and 614 hours of observations in high proportion BIPOC facilities in MN, coupled with resident clinical Minimum Dataset assessments linked with survey data on residents’ QoL. The findings show significant racial/ethnic disparities in QoL with need for system level changes. Given the increasing racial/ethnic diversity of NHs, ensuring equity in QoL for BIPOC residents is an urgent priority for NHs to remain relevant in the future.

ELDER ABUSE IN SPECIAL POPULATIONS IN THE US: AMERICAN INDIANS AND ALASKA NATIVES AND THOSE LIVING IN THE RURAL SOUTH

Pamela B. Teaster Teaster, Virginia Polytechnic Institute & State University, BLACKSBURG, Virginia, United States

The number of older adults who experience abuse, neglect, and exploitation as well as the complexities of the cases continue to increase, despite advances in prevention and intervention of the problem. At once a multifaceted problem that involves intertwining individual, relational, community, and societal contexts, issues related to elder abuse become even more complicated among special populations, which require a nuanced understanding and approach to prevention, detection, and intervention. This presentation is a compilation of the findings from studies of the mistreatment of older American Indians and Alaska Natives (AIANs) and adults living in the rural south, all populations that are understudied. Both research and practical policy and practice solutions that have the potential to resolve disparities in these populations will be discussed.

SUPPORTING DIVERSE FAMILY CAREGIVERS

Pamela Nadash, University of Massachusetts Boston, Boston, Massachusetts, United States

The RAISE Family Caregiving Advisory Council, created under the Recognize, Assist, Include, Support, and Engage (RAISE) Family Caregivers Act (2018) has been tasked to support the Secretary of Health and Human Services in developing a national family caregiving strategy. This presentation reports on research commissioned to support the activities of the Council, which aimed to engage a broad range of stakeholders in identifying concrete strategies to carry out the Goals identified as critical to supporting family caregivers. One priority was to engage with organizations representing the diversity of family caregivers, including groups working with Blacks, Indigenous people, Asian-Americans, Pacific Islanders, and other people of color, along with groups such as faith organizations that work with under-resourced communities. Respondents had