

(2009-2013 and 2017-2018, respectively) and had valid accelerometer data (>4 days with >10 hours/day pre- and post-retirement). Accelerometer-based PA was categorized into average minutes per day spent in sedentary, light-intensity, and moderate-to-vigorous PA. Participants reported changes (less, same, more) in 12 types of PA. After retirement, participants decreased both sedentary time (by 36.3 minutes/day) and moderate-to-vigorous PA (by 5.6 minutes/day). Conversely, there was an increase in light-intensity PA (+18.1 minutes/day) after retirement. Participants reported changes in their participation level in various PA activities. For example, 41% reported an increased amount of TV viewing, 42% reported less walking, and 31% reported increased participation in volunteer activities. Findings indicate that retirement coincides with a change in the time spent in each intensity category and the time spent across a range of activity types. Further research is warranted to examine how these changes in physical activity patterns influence post-retirement health status.

THE EFFECT OF THEORY-LED INTERVENTION FOR KNEE OSTEOARTHRITIS IN OLDER ADULTS: A CLUSTER RANDOMIZED TRIAL

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Knee osteoarthritis (KOA) is a common joint disease in people over 60 years old. Exercise therapy is one of the most effective non-pharmacological treatments for KOA, but low exercise adherence needs to be improved. This two-arm cluster randomized trial study was to evaluate the effect of the transtheoretical model-lead home exercise intervention (TTM-HEI) program on exercise adherence, KOA symptom (pain intensity and joint stiffness) and knee function (lower limb muscle strength and balance) in Chinese older adults diagnosed with KOA. A total of 189 community-dwelling older adults with KOA (intervention group: $n = 103$, control group: $n = 86$) were enrolled from 14 community centers in Beijing, China in 2018. The intervention was a two-stage and 24-week transtheoretical model-based exercise program, and the control group underwent a same length but non-theory-based exercise program. Exercise adherence was measured at weeks 4, 12, 24, 36, and 48 after the program started, KOA symptoms and knee function were measured at baseline, week 24, and week 48. Results showed that the growth rate of exercise adherence in the intervention group increased 2.175 units compared with the control group (unstandardized coefficient of slope on group B2 = 2.175, $p < 0.001$), and the intervention program maintained participants' exercise adherence with 5.56 (SD = 1.00) compared with 3.16 (SD = 1.31) in the control group at week 48. In addition, TTM-HEI program showed significant effects on relieving KOA symptoms and improving knee function. This study provided an effective strategy for KOA intervention.

TYPE 2 DIABETES REDUCES THE MUSCLE ANABOLIC EFFECT OF RESISTANCE EXERCISE TRAINING IN OLDER ADULTS

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Type 2 Diabetes Mellitus (T2DM) accelerates the incidence and increases the prevalence of sarcopenia in older adults. This suggests an urgent need for identifying effective sarcopenia treatments for older adults with T2DM. It is unknown whether traditional approaches, such as progressive resistance exercise training (PRET), can effectively counteract sarcopenia in older patients with T2DM. To test the efficacy of PRET for the treatment of sarcopenia in older adults with T2DM, 30 subjects (15 T2DM and 15 age- and sex- matched controls) underwent metabolic testing with muscle biopsies before and after a 13-week full-body PRET program. Primary outcome measures included changes in appendicular lean mass, muscle strength, and mixed muscle fractional synthesis rate (FSR). Before PRET, BMI-adjusted appendicular lean mass was significantly lower in the T2DM group (0.7095 ± 0.0381 versus 0.8151 ± 0.0439 , $p < 0.0001$). As a result of PRET, appendicular lean mass adjusted for BMI and muscle strength increased significantly in both groups, but to a lesser extent for the T2DM group ($p = 0.0009$). Preliminary results for FSR ($n = 25$) indicate that subjects with T2DM had lower basal FSR prior to PRET ($p = 0.0197$). Basal FSR increased significantly in the control group after PRET ($p = 0.0196$), while it did not change in the T2DM group ($p = 0.3537$). These results suggest that in older adults the positive effect of PRET on muscle anabolism and strength is reduced by T2DM. Thus, older adults with T2DM may require more intensive, multimodal and targeted sarcopenia treatment. Funded by NIH R01AG049611 and P30AG024832.

SESSION 3027 (PAPER)

SENSORY HEALTH AND IMPAIRMENT (PAPER)

A SYSTEMATIC REVIEW OF VISUAL IMPAIRMENT AND COGNITIVE DECLINE AMONG OLDER ADULTS

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Cognitive and visual impairments frequently coexist. With the aging of populations worldwide, the prevalence of these conditions are projected to increase substantially over time. A number of studies suggest that cognitive function and vision impairment are associated, and it is hypothesized to be due to a (1) common cause etiology, where both share common risk factors, and/or (2) causal association, where visual impairment causes cognitive decline. Sensory loss can lead to increased cognitive load, structural and functional changes in the brain, and/or decreased emotional, social, and physical well-being, all of which could potentially increase the risk of cognitive impairment. We conducted a systematic review of the existing literature, examining the association between cognitive and visual impairment among older adults. A total of 80 observational studies that reported a measure of association between visual and cognitive function and met

the following criteria were included: (1) cross-sectional or longitudinal study design, (2) baseline mean age of participants ≥ 50 years, and (3) sample size of ≥ 100 participants. Of these 80 studies, 56 found a positive, significant association between visual function and cognitive decline. Forty-nine of the 56 studies used objective measures to test for visual acuity, contrast sensitivity, or visual fields. The sample included participants from 14 countries, including the US, UK, China, and Australia among others. Converging evidence of an association between vision impairment and subsequent cognitive decline suggests that visual impairment is a possible modifiable risk factor for cognitive decline and dementia. This hypothesis should be tested in prospective, controlled studies.

COMPROMISED VISION IMPAIRS SUCCESSFUL AGING AMONG ASSISTED LIVING RESIDENTS

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Community dwelling independent older adults' successful aging is known to be hampered by sensory and cognitive impairments. However, little is known about to what degree these impairments affect successful aging among assisted living (AL) residents. The purpose of this quantitative study, conducted in three (AL) facilities, was to describe factors affecting successful aging. A total of 88 older adults ($M=89.0$, $SD=7.54$), mostly women ($n=68$), completed hearing (CALFRAS-Strong procedure at 75cm, 35cm, and 2cm), vision (Jaeger reading [proximate], Snellen Acuity [visual acuity]), and cognitive screening (MiniCog, Borson et al), as well as the Lawton Instrumental Activities of Daily Living (IADL) and Successful Aging Inventory (SAI, Troutman et al, 2011). Most (68%) demonstrated hearing loss >25 DB, with a significant difference demonstrated between age groups (age 65-89; $n=38$) (90-100; $n=49$) with the older group demonstrating worse hearing ($F(1,80)=5.9$, $p=.017$). Some vision compromise was noted for both reading (14.3%) and visual acuity (10.8%). Over one third of participants (34.1%) demonstrated compromised cognition. The SAI results indicated most participants were managing IADLs well ($M=6.11$, $SD=1.42$) and aging successfully ($M=63.39$, $SD=9.04$). Hearing, cognition and IADLs were not significantly related to successful aging. However, when compared to those without vision issues, participants with compromised vision, both reading and visual acuity, scored significantly lower on the SAI (reading $F(1,75)=24.9$, $p=.000$; visual acuity $F(1,28)=4.31$, $p=.000$). The infrastructure provided by AL settings may compensate for hearing, cognition, and IADL problems, but not as well for vision problems. Interventions supporting AL residents' vision should be a priority to improve successful aging.

HYPOSMIA AND NEUROIMAGING SIGNATURE IN COMMUNITY-DWELLING OLDER ADULTS

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Olfaction declines with aging, and hyposmia, or impaired sense of smell, is associated with neurodegenerative disorders including Alzheimer's Disease (AD) and Parkinson's Disease (PD). Neuroimaging studies of hyposmia in AD/PD patients have often examined pathology-specific brain regions. Our knowledge of neural correlates in regions that mediate olfaction in community-dwelling older adults, is limited. We quantified mean diffusivity (MD) of the gray matter (GM) using diffusion tensor imaging in a community-dwelling sample of 308 older adults (mean age: 82.9 years, 58% women, 40% black). We focused on total brain and these regions involved in olfaction- olfactory bulb, amygdala, entorhinal cortex, orbitofrontal cortex, and hippocampus. Smell was tested with a scratch-and-sniff validated odor identification test, the Brief Smell Identification Test (BSIT). Hyposmia was defined as BSIT score of ≤ 8 , assessed about 7 years prior to neuroimaging. In our sample, 23% had hyposmia, more in men (30%) than in women (19%). Hyposmia was not significantly associated with cardiovascular risk factors such as hypertension; diseases such as stroke; age; race; cognitive or mobility functions (all $p>0.1$). In linear regression models adjusted for demographics and brain atrophy (total brain gray matter volume divided by intracranial volume), hyposmia was significantly associated with higher GM MD (lower microstructural integrity) of the left orbitofrontal cortex (standardized beta: 0.142, $t=2.56$, $p=0.011$). Understanding the neural substrates involved in hyposmia in aging is an important step towards advancing research on hyposmia in non-clinic-based, community-dwelling populations.

OLFACTION AND PHYSICAL FUNCTION IN OLDER ADULTS: FINDINGS FROM HEALTH ABC

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The present study aims to investigate poor olfaction in relation to physical functioning in community-dwelling older adults and potential sex and race disparities. The analysis included 2511 participants aged 71-82 years (51.7% women and 38.4% blacks) from the Health Aging, and Body Composition (Health ABC) study. Olfaction was tested with the 12-item Brief Smell Identification Test (BSIT). Physical function measures included the Short Physical Performance Battery (SPPB), the Health ABC Physical Performance Battery (HABCPPB), gait speed of 20-meter walk, fast 400-meter walking time, grip strength, and knee extensor strength, repeatedly assessed annually or biennially for a follow-up of seven years. We analyzed each of these physical function measures using mixed models, adjusting for demographics, lifestyle, and comorbidities. For all measures except grip and knee extensor strength, poor olfaction was clearly associated with poorer physical performance at baseline and a faster decline over time. For example, at baseline, the multivariate adjusted SPPB was 8.23 ± 0.09 for participants with poor olfaction and 8.55 ± 0.09 for those with good olfaction ($P = 0.02$), after seven years of follow-up, the corresponding scores decreased to 6.46 ± 0.12 and 7.36 ± 0.10 respectively