maturation to sarcopenia later in life. Biological pathways that explain this association likely include physiological, environmental, and genetic factors that facilitate communication between bone and muscle, and span the life course. Determining their influence is the next important step in this work.

ARE THERE BIDIRECTIONAL ASSOCIATIONS BETWEEN COGNITION AND BALANCE ABILITY: EVIDENCE FROM A BRITISH BIRTH COHORT

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Age-related changes in cognitive and balance abilities are well-established, as is their correlation with one another. There is, however, limited evidence regarding the directionality of associations and whether or not common biological processes may underlie their age-related declines. The main aim was to explore bidirectional associations between balance and cognitive abilities in mid-later life using data from the MRC National Survey of Health and Development, the 1946 British birth cohort (n=2735). Cognition was assessed at ages 43, 53, 60-64 and 69 with verbal memory and search speed tasks. One-legged standing balance time (eyes closed) was assessed at ages 53, 60-64 and 69. Two autoregressive cross-lagged models simultaneously assessed bidirectional associations of balance with verbal memory and search speed over time. Results suggest a unidirectional association between verbal memory and subsequent balance in both sexes, decreasing with age from 0.14 SD balance (95%CI: 0.10,0.17) per 1SD verbal memory to 0.06 (0.01,0.10) to 0.05 (0.01,0.09). Search speed at age 43 was associated with balance at age 53 [men: 0.11(0.06,0.16); women: 0.09 (0.03,0.13)]; additionally, in men, there was evidence of a bidirectional association between ages 60-64 and 69 [balance to search speed: 0.05 (0.00,0.10); search speed to balance: 0.09 (0.02,0.16)]. These findings support the notion that successful balance relies mainly upon cognitive processing to successfully integrate vestibular, visual and proprioceptive input with motor output. Including a cognitive component in balance and fall risk intervention programs could have an additive benefit in improving neural pathways involved in balance and thus reducing fall risk.

COMPARING THE PROGNOSTIC VALUE OF GERIATRIC HEALTH INDICATORS: A POPULATION-BASED STUDY

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Several indicators associated with poor outcomes in older persons have been developed, but a direct comparison of their accuracy is lacking. Knowing which indicator performs better in the prediction of specific outcomes could help health care providers to choose the most suitable one. We compared the accuracy in predicting different clinically-relevant outcomes of five indicators: frailty index (FI), frailty phenotype (FP), the Health Assessment Tool (HAT), walking speed (WS), and multimorbidity. Data from the Swedish National Study on Aging and Care in Kungsholmen, an ongoing population-based study including 3363 people 60+, were used. The ability of the five indicators to predict mortality (3- and 5-year), unplanned hospitalizations (1- and 3-year), and 2+ health provider contacts (6 months prior and after assessment) was compared using the area under the ROC curves (AUC). FI, WS, and HAT showed the best accuracy in the prediction of mortality (AUC for 3-year mortality: 0.84, 0.85, 0.87 respectively; AUC for 5-year mortality: 0.84, 0.85, 0.86 respectively; all $p < 0.05$). Unplanned hospitalizations were better predicted by the FI (AUC: 1-year 0.73; 3-year 0.72) and HAT (AUC: 1-year 0.73; 3-year 0.71).The most accurate predictor of multiple contacts with health providers was multimorbidity (AUC: 0.67; $p < 0.05$). All indicators, but multimorbidity, showed higher accuracy among older individuals (75+ years). Different indicators can be used to support physicians during their decision-making process. Some of these tools may also be used to forecast future use of health-care resources, including both hospital-based services and outpatient ones .

GENOME-WIDE LINKAGE ANALYSIS IDENTIFIES A NOVEL LOCUS FOR LONGITUDINAL GAIT SPEED CHANGE WITH AGING

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Gait speed is an indicator of health and function with aging. The potential genetic contributions to gait speed and its decline with aging are not well characterized. We sought to better quantify the genetic contributions to and identify potential genes and genetic variants underlying change in gait speed among older adults. To accomplish these aims, we used data from 2379 individuals belonging to 509 families in the Long Life Family Study (mean age 64 ± 12, range 30–110 years; 45% men). Gait-speed was measured over 4 meters at baseline and after an average of 7±1.1 years. Quantitative trait linkage analyses were completed using pedigree-based maximum-likelihood methods with logarithm of the odds (LOD) scores > 3.3 indicating genome-wide significance. We also performed linkage analysis in the top 10% of families contributing to LOD scores to allow for heterogeneity among families (HLOD). Data were adjusted for age, sex, height and field center. At baseline, 26.9% of individuals had "low" gait-speed <1.0 m/s (mean: 1.1±0.2

m/s) and gait speed declined at a rate of -0.02±0.03 m/s per year (p<0.0001). Baseline and change in gait-speed were significantly heritable (h2 = 0.24-0.32, p<0.05). We did not find significant evidence for linkage for baseline gait speed; however, we identified a potentially novel locus for change in gait speed on chromosome 16p (LOD 4.2). A subset of 21 families contributed to this linkage peak (HLOD = 6.83). Sequence analysis of the chromosome 16 region may yield new insight on the biology of age-related mobility decline.

TWELVE-YEAR CLINICAL TRAJECTORIES OF MULTIMORBIDITY IN OLDER ADULTS: A POPULATION-BASED STUDY

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The scarce knowledge of multimorbidity development hampers the effectiveness of clinical interventions. We aimed to identify multimorbidity clusters, trace their evolution in a cohort of older adults, and detect the clinical trajectories of single individuals as they move among clusters over 12 years. Population-based study including 2931 persons 60+ with ≥2 diseases participating in the SNAC-K study. A fuzzy c-means cluster algorithm was used to group participants by disease patterns at baseline and follow-ups. Migration from one cluster to another was tracked over time, and the association between the clusters and mortality was tested. At baseline 52% of participants were classified into five clinically meaningful disease clusters: psychiatric and respiratory (5%), heart (9%), respiratory and musculoskeletal (16%), cognitive and sensory impairment (10%), and eye diseases and cancer (11%). The remaining 48% of participants (unspecified group) were grouped in any cluster at baseline but greatly contributed to the other clusters at follow-ups. Multimorbidity clusters that included cardiovascular and neuropsychiatric diseases presented a significantly higher mortality risk (odds ratios ranging 1.58–6.00) than the group not part of any clusters. Clusters characterized by cardiovascular and neuropsychiatric diseases included 25% of the study population at baseline and 28% of participants at six years, and they accounted for 51% of deaths at six years and 57% of deaths at twelve years. Multimorbidity clusters and clinical trajectories of older adults with multimorbidity show great dynamism over time. The multimorbidity clusters and trajectories identified in this study may help identifying groups with similar needs and prognosis.

SESSION 3175 (PAPER)

EXERCISE INTERVENTIONS TO ADDRESS FUNCTIONAL DECLINE

COGNITIVE PERFORMANCE, EXERCISE, AND AMYLOID BURDEN: A RANDOMIZED CONTROLLED TRIAL

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Exercise is a promising strategy for prevention of Alzheimer's disease (AD). Amyloid neuroimaging can identify individuals at risk of developing AD prior to displaying symptoms. We screened adults (65+) with Florbetapir PET imaging and a comprehensive cognitive battery. We randomized 117 participants with normal cognition into a 52-week aerobic exercise program to examine the effects of aerobic exercise on cognitive performance. We compared an intensive exercise treatment group to a standard of care control group. Cognition was assessed at baseline, 26 weeks, and 52 weeks in the domains of verbal memory, visuospatial processing, attention, and executive function. Interim results on 87 participants show cardiorespiratory fitness improved in the exercise group vs. control group (t=3.66(81), p< .001). The degree of change in cardiorespiratory fitness did not differ between those with and without elevated amyloid (t=-0.37(81), p=.710). Greater improvements in cardiorespiratory fitness predicted better performance on cognitive tests including trailmaking test, Stroop test, and digit symbol substitution test, which did not differ by amyloid status. Elevated amyloid levels predicted lower cognitive scores in logical memory, space relations, and identical pictures test. Our findings suggest PET imaging is a valid marker of cognitive performance in non-impaired older adults, and that this pre-clinical amyloid status did not reduce the cognitive benefits of exercise for those who improved in cardiorespiratory fitness. Exercise interventions hold promise for cognitive maintenance among pre-symptomatic older adults with elevated amyloid levels. Finally, results highlight the importance of evaluating multiple cognitive domains which are associated differently with exercise and amyloid status.

FOLLOW-UP OF A 6-MONTH LOW-TO-MODERATE INTENSITY VIRTUAL-HOME EXERCISE PROGRAM TO PREVENT FALLS

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The aim of this study is to determine 3-month post effects of and adherence to a 6-month virtual-group exercise at home (V-GEAH) program, which offered low-to-moderate intensity exercise to community-dwelling older adults with past falls. The V-GEAH program converted solitary exercise to group exercise connecting participants via web-conference technology. A treatment group (n=25, 60 – 90 years old) exercised three times a week for 30-45 minutes each session. The program achieved 84.4% – 93.3% adherence, reducing fall risks. This study measured falls, balance confidence, lower