

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 ($h^2 = 0.24-0.32$, $p < 0.05$). 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

Davide Liborio Vetrano,¹ Albert Roso-Llorach,² Sergio Fernández,² Concepción Violán,² Graziano Onder,³ Laura Fratiglioni,⁴ Amaia Calderon-Larranaga,⁴ and Alessandra Marengoni⁵, 1. *Aging Research Center - Karolinska Institutet, Stockholm, Sweden, Sweden*, 2. *Fundació Institut Universitari per a la recerca a l'Atenció Primària de Salut Jordi Gol i Gurina (IDIAPJGol), Barcelona, Spain, Spain*, 3. *Centro di Medicina dell'Invecchiamento, IRCCS Fondazione Policlinico "A. Gemelli" and Catholic University of Rome, Rome, Italy*, 4. *Aging Research Center, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet and Stockholm University, Stockholm, Sweden*, 5. *Department of Clinical and Experimental Sciences, University of Brescia, Brescia, Italy*

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

Amber Watts,¹ Eric Vidoni,² Jill Morris,² Mark Perry,² David Johnson,³ and Jeffrey Burns², 1. *University of Kansas, Lawrence, Kansas, United States*, 2. *University of Kansas Medical Center, Kansas City, Kansas, United States*, 3. *UC Davis, Davis, California, United States*

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

Machiko R. Tomita,¹ and Nadine M. Fisher¹, 1. *University at Buffalo, Buffalo, New York, United States*

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