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

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 Marengoni[5], *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 Burns[2], *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. Fisher[1], *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

extremity muscle strength and endurance, gait speed, stride length, and activities of daily living, and compared with baseline and posttest (at 6 months) data using Repeated measures ANOVA with contrasts. During the follow-up period, 40% of the treatment group exercised 2+ times/week (Adherer, or A), and 60% did 1 time/week or less (Non-adherer or NA). Half of NA joined a community exercise group and the rest did not do exercise due to pain in various body parts. None of A fell while 26.7% of NA and 20% of C did. At follow-up, the control group (C, n=25) showed no change or significant decline from posttest for all measures. A maintained gains made in the intervention period in all measures, but NA significantly lost strength in hamstrings, hip abduction, and quadriceps and hamstring endurance. These results indicate that low-to-moderate intensity exercise and technology use for providing visual instruction, regular monitoring and evaluation, and environments to increase participants' accountability are elements for successful home-based exercise programs.

OUTCOMES OF FIT & STRONG! PLUS: A GROUP EXERCISE AND WEIGHT LOSS PROGRAM TO TREAT OSTEOARTHRITIS

Andrew DeMott,[1] and Susan Hughes[1], *1. University of Illinois at Chicago, Chicago, Illinois, United States*

Overweight older adults with osteoarthritis (OA) face increased risk for disability; however, no evidence-based programs target weight and OA simultaneously. Fit & Strong! (F&S!) is an 8-week evidence-based exercise program for persons with OA that improves lower extremity (LE) strength and mobility out to 18 months. F&S! Plus, a weight loss version of F&S! was tested against standard F&S! in a comparative effectiveness trial. Two and six-month trial outcomes were previously presented, this session will present maintenance outcomes at 12 and 18 months. This trial randomized 413 participants, 210 to F&S! and 203 to F&S! Plus. The mean sample age was 67.9, 86% female, and 92% African American. At 12 months, significant and marginally significant between-group differences favoring F&S! Plus were seen in several outcomes, including weight (p=.049), BMI (p=.04), waist circumference (p=.004), LE physical function (p=.09), 6-minute distance walk (mobility) (p=.08), 30-second chair stands (LE strength) (p=.46), and anxiety & depression (p=.08). At 18 months, only LE strength remained significantly improved for the F&S! Plus group (p=.045), however several within-group improvements remained statistically significant for both groups out to 18 months, including weight, BMI, waist circumference, LE pain & physical function, 30-second chair stands (LE strength), anxiety & depression, and self-efficacy for weight-management. F&S! Plus showed significant improvements over standard F&S! for several outcomes at the conclusion of the intervention (2 months) and many were maintained out to 12 months, with LE strength continuing to 18 months. Both groups showed significant within-group improvements out to 18 months.

RELATIONSHIP OF CARDIOPULMONARY EXERCISE TESTING AND FIELD WALKING TESTS IN MILD-MODERATE ALZHEIMER'S DEMENTIA

Dereck L. Salisbury,[1] and Fang Yu[1], *1. University of Minnesota School of Nursing, Minneapolis, Minnesota, United States*

The purpose of this study was to investigate relationships among peak exercise parameters on 6-minute walk (6MWT) and shuttle walk tests (SWT), and laboratory-based cardiopulmonary exercise testing (CPET). These relationships have been established in cardiopulmonary patient populations, but not in community-dwelling older adults with mild-moderate Alzheimer's dementia (AD). This study is a cross-sectional analysis of the baseline data of 6MWT, SWT, and CPET from the FIT-AD Trial (n=88: 49 males [76.6 {7.0} years and MMSE 21.5{3.5}] and 39 females [77.3 {6.5} years and MMSE 22.1 {3.4}]). Peak values for each test included heart rate (HR), systolic blood pressure (SBP), and rating of perceived exertion (RPE). Peak oxygen assumption (VO2) was measured in the CPET. Peak walking distance (PWD) was measured for the 6MWT and SWT. CPET produced significantly higher peak HR (118.7 [17.5] vs. 106 [22.8] vs. 106 [18.8] bpm), RPE (16 [2.1] vs. 12 [2.3] vs. 11 [2.1]) and SBP (182 [23.7] vs. 156 [18.9] vs. 150 [16.9] mmHg) compared to the SWT and 6MWT respectively. PWD on SWT (240.4 [128.1] m) and 6MWT (364.3 [108.5] m) significantly correlated with peak VO2 (17.0 [4.3]ml/kg/min) on CPET (r=.44 and r=.43) respectively. Correlations of peak VO2 and PWD on SWT in persons with AD are considerably lower than what is seen for persons with cardiopulmonary diseases. This lower correlation seen in our sample may be due to shorter PWD on walking tests. Future research should focus how mobility affects correlation of peak values on these tests.

RESPONDERS TO A PHYSICAL ACTIVITY COACHING PROGRAM IN COPD

Huong Q. Nguyen,[1] Amy Liu,[1] Janet Lee,[1] and Anny Xiang[1], *1. Kaiser Permanente Southern California, Pasadena, California, United States*

Rationale: Physical inactivity is associated with worse outcomes in COPD. There remains a critical gap regarding the real-world effectiveness of improving physical activity (PA) in large representative samples of older adults with COPD and its impact on hospitalizations. Methods: A pragmatic randomized trial was conducted to determine the effectiveness of a 12-month home-based physical activity coaching intervention (Walk On!, WO) compared to standard care (SC) in 2,707 patients at high risk for COPD exacerbations. The WO intervention included collaborative monitoring of steps, semi-automated step goal recommendations, individualized reinforcement, and peer/family support. This is a subgroup analysis of 321 patients who were randomized to WO and participated in the program, matched to SC patients based on their propensity scores (PS). Multivariate cox proportional hazards models were used to determine differences in all-cause hospitalizations in the 12-months following randomization. Results: WO patients with low PS (n=160) were matched to 888 low PS SC patients and 161 WO patients with high PS (n=161) were matched to 405 high PS SC patients. Characteristics of the cohort were: age: 72±10; 54% females; 74% Caucasian; FEV1% predicted: 61±23. WO-low PS patients had lower risk of all-cause hospitalizations compared to SC-low PS patients [HR:0.69, (95%CI, 0.50, 0.96), P=.03]. WO-high PS patients did not have significantly lower hospitalization risk compared to SC-high PS patients [HR:0.87, (95%CI, 0.64, 1.20), P=.40]. Conclusions: