feasibility of a music and mindfulness intervention in an assisted living community (ALC) in Tampa, FL. Methods: We used a mixed-methods single group pre-post study design. To date, a total of 5 PWD and 3 FCs were enrolled, and all completed the 4-week intervention (12 sessions for PWD and 4 sessions for FCs). Outcome measures include behavioral symptoms and sleep quality for PWD, and mindfulness, sleep quality and perceived stress for FCs. Outcome data were collected via survey questionnaires and focus group interviews (FCs and staff). Results: Preliminary analysis showed that the intervention is well-received by PWD, FCs, and ALC staff. PWD participants experienced a reduction in behavioral symptoms post-intervention (Cohen's d=0.33). FC participants reported increased mindfulness and reduced stress. In focus group interviews, both FCs and staff corroborated the positive findings in residents' mood and behaviors. Barriers to large scale implementation include intervention time commitment (ALC staff) and scheduling difficulties due to work (FCs). Both FCs and ALC staff recommended the continuation of the intervention and making it available to all memory care residents. Based on the initial results, additional testing of the intervention is currently in progress (10 PWD) and updated results will be reported. Implications for conducting community-based non-pharmacological interventions will be discussed.

AGING DIMINISHES THE DIRECT ASSOCIATION BETWEEN BRAIN ACTIVATION AND POSTURAL CONTROL DURING THE N-BACK TASK

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Aging diminishes the control of standing posture, which relies upon the capacity to activate brain regions involved in cognitive-motor function. Our prior work shows that impaired cerebral blood flow (CBF) regulation within the middle cerebral artery (MCA) in response to the N-Back executive function task is linked to worse walking performance in older adults. However, the effects of aging on the relationship between CBF regulation and postural control during the N-Back task is unknown. Sixteen young (27 years) and 15 older participants (76 years) stood upright and completed the N-Back (i.e., control [Identify X, IdX] and an experimental condition [2-Back]) presented on a screen while CBF and postural sway were simultaneously recorded. CBF was recorded using transcranial Doppler. Sway was recorded using a lumbar motion sensor. Elliptical area, root mean square (RMS), distance, velocity, and acceleration were computed. There were no group differences in sway outcomes ($p>0.37$). Young participants had higher CBF during the IdX and 2-Back compared to older participants ($p<0.001$). Within the young, and not within older participants, those with lower CBF during performance of the 2-Back exhibited greater elliptical area ($\beta=-0.67$, $p=0.03$) and RMS ($\beta=-0.68$, $p=0.03$), faster acceleration ($\beta=-0.78$, $p=0.02$), and longer distance ($\beta=-0.64$, $p=0.04$). There were no associations between CBF and sway outcomes in either group during the IdX. These results suggest that dual-task sway performance is directly linked to CBF in younger adults, and furthermore, this link is diminished in older adults. These results underpin the need for cognitive-motor interventions in older adults.

ATTITUDES AND PREFERENCES FOR ROBOT-LED PIANO COGNITIVE TRAINING: FEASIBILITY IN MILD COGNITIVE IMPAIRMENT

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Cognitive training has been shown to improve neural plasticity, increase cognitive reserve and reduce the risk of dementia in older adults. Specifically, learning to play the piano has been shown to be an engaging, multimodal form of cognitive training. However, accessing this form of cognitive training can pose a challenge for older adults. Socially assistive robots present a unique opportunity to increase access to user-tailored piano learning cognitive training. The present study utilized a robot-led four-week piano lesson feasibility intervention for older adults with mild cognitive impairment ($N = 11$; $M= 74.64 \pm 6.02$ years of age; 72.72% female; 90.1% White/Caucasian). Cognitive Status was assessed during screening via the Telephone Interview for Cognitive Status, and after screening via the Mini-Mental State Exam and the CNS Vital Signs computerized test suite to measure cognitive domain-specific functioning. Perceptions and acceptance of the robot were measured using the Robotic Social Attributes Scale (RoSAS) and Technology Acceptance Scale. Cognitive function improved after four weeks of training in the verbal memory, executive function, reaction time and cognitive flexibility domains, and in the computed neurocognitive index score ($p<0.05$). Survey data and qualitative interviews show that participants perceived the robot instructor as socially engaging, competent, useful, and easy to use. These results provide insight into the potential of SARs to facilitate cognitive training in the form of piano lessons, as well as recommendations for creating a suitable robot instructor for this application.

KYNURENINE, AN ENDOGENOUS AHR AGONIST, UPREGULATES CXCL12- AND HDAC3-TARGETING MIRNAS INHIBITING OSTEOGENESIS

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Osteoporosis is among the most debilitating disorders for aging men and women. Mechanisms underlying loss of bone mass and impaired fracture healing in aged population are not completely understood. Our lab and others

reported increased levels of the oxidized tryptophan metabolite, kynurenine (Kyn), in bone marrow mesenchymal stem cells (BMSCs) and interstitial fluid. Here, we report that Kyn significantly inhibits osteogenic differentiation of BMSCs likely via activating aryl hydrocarbon receptor (AhR). KYN significantly downregulated mRNA levels of pro-osteogenic CXCL12 axis, including CXCL12, and its two main receptors CXCR4 and ACKR3. Secreted protein levels of CXCL12 were significantly reduced with KYN, and were rescued upon the use of AhR antagonist 3',4'-dimethoxyflavone (DMF). Moreover, KYN upregulated levels of pro-aging and CXCL12-targeting miRNAs miR-29b-1-5p and miR-141-3p. Additionally, KYN significantly inhibited mRNA and protein levels of the epigenetic enzyme Hdac3 which is responsible for activating osteogenesis and inhibiting adipogenesis in BMSCs. Using mutagenesis and luciferase assays, we show evidence that miR-141-3p and miR-29b-1-5p directly target CXCL12 3'-UTR. We also show that miR-29b-1-5p directly targets Hdac3 explaining the significantly increased acetylation levels of H4 with KYN treatment. Finally, we show that mRNA levels of both KYN receptor AhR, and KYN-producing enzyme IDO-1 are regulated by CXCL12. We believe this data explains a novel mechanism of the bone aging phenotype and provides multiple potential clinical intervention targets for controlling osteoporosis.

LATENT DYADIC CHANGE MODEL OF SPOUSAL SIMILARITY IN PHYSIOLOGICAL MARKERS OF AGING

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Older adult populations are known for their diversity in health. Within couples, however, population studies have documented exceptional levels of spousal similarity in health and health behaviors. The presence of spousal similarity in health among older adults suggests a process of convergence, yet few studies have examined this phenomenon longitudinally. We present a latent dyadic change model to estimate the extent to which couples' similarity in grip strength, Cystatin C, and lung function--indicators of frailty/physiologic reserve. The model is a longitudinal extension of the latent dyadic model, where husbands' and wives' markers of health are parsed into variance that is attributed to the couple and individual levels. Change in the biomarkers of aging is then estimated at the couple and individual levels, resulting in estimates of husbands' change, wives' change, and shared change. We illustrate our model using physiological data from the Health and Retirement Study, a nationally representative panel study of individuals aged 51+ in the United States (3,500+ eligible couples). At the individual level, grip strength and lung function decreased, whereas Cystatin C increased for both husbands and wives. The shared change parameter estimated 16% to 25% of the change in markers of aging existed at the couple level. This suggests, consistent with convergence, that similarities in markers of aging at T2 were due to shared processes of change. Shared processes held after adjusting for indicators of partner selection. The latent dyadic change model offers a methodology to examine change in couples' shared processes over time.

SPOUSAL DRIVING CESSATION AND VOLUNTEERING: MODERATING ROLE OF CAREGIVING AND DEPRESSION

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Driving cessation is a normative transition in later adulthood, yet previous research shows that having a spouse who ceases to drive, even when you are still able to, negatively impacts one's own engagement (i.e., formal and informal volunteering). Little is known about the conditions under which volunteer engagement might vary after a spouse stops driving. We used longitudinal data from 10 waves (1998–2016) of the Health and Retirement Study (HRS) to examine whether depressive symptoms and caregiving demands moderate the association between a spouse's driving cessation and one's own formal and informal volunteering. Respondents were included if, at baseline, both spouses participated in HRS, both were age 65+, and both were still driving. Respondents were dropped at the time of their own driving cessation, to focus specifically on the impact of spousal driving cessation. Multilevel model results for 1,370 husbands and 1,368 wives show that moderation occurred only for wives who were still driving. After controlling for sociodemographic factors, physical health, and cognitive ability, husbands' driving cessation negatively impacted formal volunteering but only for wives who were primary ADL and IADL caregivers for their spouses. Further, husbands' driving cessation negatively impacted informal volunteering for wives who reported relatively high levels of depressive symptoms. Results suggest the importance of contextual factors like caregiving engagement/needs and psychological wellbeing, especially for wives, when examining the role of spousal driving cessation in partners' volunteer engagement, and highlight the need for additional research on the relationship between spousal driving cessation and volunteering for husbands.

GENETIC PREDISPOSITION TO ACCELERATED BIOLOGICAL AGES PREDICTED BY BIOCHEMICAL MARKERS

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Biological ages predicted by biochemical markers (biomarkers) outperform other measures in predicting a variety of aging outcomes. Several have been developed in recent studies, and there is evidence that each may independently predict mortality. While the included biomarkers are disease-associated, it is unclear what aspects of aging are captured. We aimed to understand and quantify genetic predisposition to accelerated biological ages, determined based on two measures, PhenoAge (9 biomarkers plus chronological age, Levine et al. 2018) and BioAge (7 biomarkers plus chronological age, Levine 2013). We performed genome-wide scans using the