Results suggest there are beneficial effects to WM microstructure after CT in frontal and medial brain regions, with some studies showing improved performance in cognitive outcomes. Benefits of CT were shown to be protective against age-related WM microstructure decline by either maintaining or improving WM after training. These results have implications for determining the capacity for training-dependent WM plasticity in older adults and whether CT can be utilised to prevent age-associated cognitive decline. Additional studies with standardised training and imaging protocols are needed to confirm these outcomes.

INVESTIGATING WALNUT CONSUMPTION AND COGNITIVE HEALTH IN A REPRESENTATIVE SAMPLE OF OLDER U.S. ADULTS

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Population aging increases the need to identify modifiable risk factors of cognitive decline such as nutritional intake. Several nutrients found in walnuts appear to play a neuro-protective role, yet few studies examine whole walnut consumption or draw from representative longitudinal samples. We draw observations from the nationally-representative Health and Retirement Study and Health Care and Nutrition Study to investigate the association between walnut consumption and cognitive trajectories among older US adults. The analytic sample consisted of 6,639 adults age 50 and over in 2013, representing a population of 77,726,682 community-dwelling older adults. Walnut consumption was a categorical measure representing no consumption, moderate consumption (< one serving per week), or high consumption (≥ one serving per week). Indicators of cognitive function representing working memory (immediate and delayed word recall) and global cognitive function (Telephone Interview of Cognitive Status, TICS) were measured at 3 time points (2012, 2014, and 2016). Latent growth models were used to estimate each linear trajectory while adjusting for covariates and complex survey design. Walnut consumption was positively associated with word recall and global mental status at baseline, but was not associated with change over the four year observational window. For example, those with high walnut consumption had baseline TICS scores .89 units greater (SE = .17, p < .001) than those consuming no walnuts. These results indicate that walnut consumption appears to have a positive association with cognitive health, but walnut consumption does not appear to be associated with short-term change in the cognitive outcomes measured.

PARALLEL DEVELOPMENT OF MEMORY, DISABILITY, AND COMORBIDITY IN U.S. ADULTS AGE 65 AND OLDER

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Cognitive health, physical function, and chronic disease represent interdependent health outcomes that may exert influence on the course of each other's development. To investigate the association between baseline health in each domain and developmental change across domains, we estimated trajectories of working memory, mobility limitations, and comorbidity among US adults age 65 and older over 18 years. We drew observations from the nationally-representative Health and Retirement Study with an analytic sample consisting of 5,963 adults age 65 and over in 1998. Immediate word recall, an 11-item Nagi scale of mobility limitations, and a summary count of eight doctor-diagnosed chronic conditions were measured biennially from 1998 to 2016. Parallel-process quadratic growth models with individually-varying time scores were used to estimate non-linear trajectories of each health measure, allowing identification of associations between baseline health and developmental change in each health process at both earlier and later stages of older adulthood. All estimates adjusted for covariates, complex survey design, and missing data. Greater baseline immediate word recall was associated with less rapid increase in mobility limitations at earlier ages. More baseline mobility limitations were associated with faster increase in comorbidity at earlier ages. Greater baseline chronic conditions were associated with more rapid increase in mobility limitations at later ages. These results highlight the importance of conceptualizing health among older adults as an interdependent and developmental process and should help clinicians recognize that single-domain health status may influence the progression of other health outcomes at different stages of older adulthood.

TUNING ENVIRONMENTAL LIGHTING TO IMPROVE SLEEP QUALITY AND COGNITIVE PERFORMANCE IN OLDER ADULTS

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Sleep is important for memory consolidation, hence the disruption of normal sleep patterns as a result of age-related changes in the circadian system could be one of the contributors to memory impairment among older adults. It is now well-established that light is the main environmental element that synchronizes circadian rhythms. An appropriate lighting condition can be considered as a non-pharmacological solution to improve the sleep quality of individuals and consequently their overall health and well-being. The present study investigates the effectiveness of two proposed whole-day lighting interventions (L1 and L2) applied by Tunable White Lighting Technology (TWLT) on sleep quality and cognitive performance in older adults. Both lighting interventions provide a high illuminance level (500 lux) in the morning and then the illumination is dimmed gradually throughout the day and reached 100 lux in the evening. However, while L1 offers a constant Correlated Color Temperature (CCT) of 2700K, during the L2 intervention, the CCT is changing in the range of 6500K – 2700K from morning towards evening. Fifteen healthy older adults (mean age = 73.2 years; 12F) participated in a 41-day counterbalanced crossover study. Participants were exposed to each lighting condition for 9 days. Actigraphy, standard questionnaires (PROMIS and PSQI), and tests (Trail Making Test (TMT) A & B and Digit Symbol Substitution Test (DSST)) were employed to measure sleep quality and cognitive performance before, during, and