Knowledge Scale. Similar to previous research, this sample of older adults held common misconceptions about AD, including the ideas that mental exercise can prevent AD (80% answered incorrectly) and individuals with AD are incapable of making decisions about their care (70% answered incorrectly). In this sample, the majority of African American older adults were aware of the fact that they have the highest risk for developing AD (20% answered incorrectly) compared to other racial groups. Analyses found no significant relationship between AD knowledge and health outcomes, alcohol consumption, or education. In conclusion to reduce AD risk, addressing AD knowledge in minority low-income population is important and needed. This is especially relevant since African American older adults are more likely to live in communities rather than nursing or assisted living facilities, receiving less access to interventions and research innovation.

USES OF REMINISCENCE IN DEMENTIA CARE

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Improving the quality of life for older adults diagnosed with dementia is a public health research priority. Reminiscence is one non-pharmacological technique used to address the behavioral and psychosocial problems associated with dementia. The uses of reminiscence in dementia care have not yet been integrated, synthesized, critically analyzed, or delineated in the literature. Whittemore and Knafl's five-step method provided the framework for this integrative review. A comprehensive search of PubMed, CINAHL Plus, SCOPUS, and PsycINFO was undertaken. Articles published in English, focused on participants with a diagnosis of mild to moderate dementia, and with evidence of using reminiscence in dementia care were included. Twenty-six studies published between 2009 and 2019 that met the inclusion criteria were analyzed. Four themes emerged from the integrated findings: (a) recovery from the darkness of depressive symptoms; (b) enhancement of cognitive functions and filling the memory gap; (c) living a fulfilling life in late adulthood, and (d) fulfilling reminiscence functions. The critical appraisal process revealed mixed effectiveness of the use reminiscence on health outcomes in dementia care due to diverse types of reminiscence, different outcomes measures, different data collection toolkits, and a lack of a standardized reminiscence protocol among research studies. Results from this review provide a better understanding of the potential benefits of using reminiscence in dementia care. However, improving the methodological rigor of future studies is necessary to attain conclusive evidence of the effectiveness of using reminiscence in dementia care. Implications of these findings for gerontological education, practice, and research will be presented.

SESSION 2931 (PAPER)

MOBILITY DISABILITY I

ASSOCIATION OF AFFECT AND GAIT PERFORMANCE IN DUAL-TASK WALKING IN NON-DEMENTED OLDER ADULTS

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Aging populations are at increased risk to experience mobility disability, which is associated with falls, frailty, and mortality. Previous studies have not examined the concurrent associations of both positive and negative affect with gait velocity. We examined whether individual differences in positive and negative affect predicted dual-task performance decrements in velocity in a dual-task (DT) paradigm in non-demented older adults. We hypothesize that positive affect would be associated with lower DT costs, and negative affect would be associated with higher DT costs. Participants (N = 403; mean age, = 76.22 (6.55); females = 56%) completed the Positive and Negative Affect Schedule (PANAS) and a DT paradigm that involved three task conditions: Single-Task-Walk (STW), Alpha (cognitive interference requiring participants to recite alternate letters of the alphabet), and Dual-Task-Walk (DTW) requiring participant to perform the two single tasks concurrently. Gait velocity was assessed via an instrumented walkway. As expected, results of a linear mixed effects model (LME) showed a significant decline in gait velocity (cm/s) from STW to DTW (estimate = -11.79; 95%CI = -12.82 to -10.77). LME results further revealed that negative affect was associated with greater decline in gait velocity from STW to DTW (ie., worse DT cost) (estimate = -0.38; 95%CI = -0.73 to -0.03). Positive affect did not, however, predict DT costs in gait velocity (estimate = -0.09; 95%CI = -0.23 to 0.05). These findings suggest that increased negative affect interferes with the allocation of attentional resources to competing task demands inherent in the DT paradigm.

COMBINING TDCS WITH A MOTOR-COGNITIVE TASK TO REDUCE THE NEGATIVE IMPACT OF DUAL-TASKING ON THE GAIT OF OLDER ADULTS

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The simultaneous performance of a secondary task while walking (i.e., dual tasking) increases motor-cognitive interference and fall risk in older adults. Combining transcranial direct current stimulation (tDCS) with the concurrent performance of a task that putatively involves the same brain networks targeted by the tDCS may reduce the negative impact of dual-tasking on walking. We examined whether tDCS applied while walking reduces the dual-task costs to gait and whether this combination is better than tDCS alone or walking alone (with sham stimulation). In 25 healthy older adults (aged 75.7±10.5yrs), a double-blind, within-subject, cross-over pilot study evaluated the acute after-effects of 20 minutes of tDCS targeting the primary motor cortex and the dorsal lateral pre frontal cortex during three separate sessions:1) tDCS while walking on a treadmill in a virtual-reality environment (tDCS+walking), 2) tDCS while seated (tDCS+seated), and 3) walking in the virtual-reality environment with sham tDCS (sham+walking). The complex walking condition taxed motor and cognitive abilities. During each session, single- and dual-task walking and cognitive function were assessed before and immediately after stimulation. Compared to pre-tDCS performance, tDCS+walking reduced

the dual-task cost to gait speed (p=0.004) and other gait features (e.g., variability p=0.02), and improved (p<0.001) executive function (Stroop interference score). tDCS+seated and sham+walking did not affect the dual-task cost to gait speed (p>0.17). These initial findings demonstrate that tDCS delivered during challenging walking ameliorates dual-task gait and executive function in older adults, suggesting that the concurrent performance of related tasks enhances the efficacy of the neural stimulation and mobility.

EFFECTS OF FNIRS PROCESSING METHODS ON PREFRONTAL HEMODYNAMICS DURING SINGLE AND DUAL TASK WALKING IN OLDER ADULTS

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functional near infrared spectroscopy (fNIRS) has been increasingly used to assess changes in the hemodynamic response during active walking in aging and disease populations. Key findings revealed that HbO2 in the prefrontal cortex (PFC) increased from single-task-walk (STW) to dual-task-walk (DTW) due to the greater cognitive demands inherent in the latter condition. However, previous studies utilized a limited and inconsistent number of algorithms and filters to remove artifacts from fNIRS-derived brain activation data. Critically, there is no gold standard for artifact removal at the present time, which reduces replicability and generalizability. To address this critical limitation, we have reanalyzed a large dataset of older adults (n=83) who underwent our walking protocol by using different hemodynamic conversion parameters (molar extinction coefficients and age and wavelength dependent differential pathlength factors) and applying different filters having various cut-off frequencies for artifact removal. On the extracted hemodynamic responses, namely oxygenated-hemoglobin (HbO2) and deoxygenated-hemoglobin (Hb), linear mixed effect model results indicated that task effects showed similar significant increases in HbO2 from STW to DTW (range of effect sizes was 0.59 to 0.64) and as well as the expected decline in Hb from STW to DTW (range of effect sizes was 0.18 to 0.32) irrespective of the methods used. In addition, the intraclass correlations suggested excellent reliability across methods (HbO2 range = 0.982 to 0.996; Hb range = 0.883 to 0.984). In conclusion, these findings provide strong support to previously published articles but also highlight the need to establish a gold standard for fNIRS processing.

NEURAL INEFFICIENCY DURING DUAL-TASK WALKING IN OLDER ADULTS: THE MODERATING EFFECT OF BRAIN MORPHOLOGY

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Aging is accompanied by changes in cognitive, physical, and brain function. Research has found increased activation in the prefrontal cortex (PFC) in dual-task-walk (DTW) as compared to single-task walk (STW) due to increased cognitive demands in the former condition. Older adults have more difficulty with DTW than younger adults, and difficulty with DTW has been found to predict functional decline in aging. As the population gets older, it is important to identify biomarkers predictive of functional decline. The neural inefficiency hypothesis posits that some people, including older adults, utilize more neural resources than others without showing benefits to behavioral performance. We examined the moderating effect of cortical thickness on PFC activation from STW to DTW. We predicted that less cortical thickness would be associated with increased PFC activation but without benefit to behavioral performance, to compensate for limited neural resources. Participants were 55 right-handed community-residing healthy older adults (mean age = 74.84 + 4.97; %female = 49.1). Cortical thickness was measured via MRI. Activation in the PFC was measured via functional near-infrared spectroscopy-derived (fNIRS) oxygenated hemoglobin (HbO2) levels. Analyses controlled for behavioral performance. Linear-mixed-effects models revealed that cortical thickness in several brain regions significantly moderated the increase in HbO2 from STW to DTW, $p < 0.01$. Thinner cortex, in regions implicated in walking and cognition, was associated with a greater increase in HbO2 levels. Supporting the neural inefficiency hypothesis, results suggest that older adults with greater cortical thinning overactivate the PFC during attention-demanding walking.

THE EFFECTS OF PAIN ON BRAIN AND BEHAVIOR DURING COGNITIVE AND MOTOR PERFORMANCES IN OLDER ADULTS

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Pain is prevalent and associated with adverse outcomes in older adults. The moderating effect of pain on cortical control of locomotion has not been assessed. This study examined the effects of subjective pain on changes in fNIRS-derived oxygenated hemoglobin (HbO2), gait velocity, and cognitive accuracy from single to dual-task walking conditions among older adults. Participants (n=383; 55% female; mean age=76) were community-residing older adults. Participants completed two single tasks [Single-Task-Walk (STW) and Cognitive Interference (Alpha)] and the Dual-Task-Walk (DTW), during which participants performed the two single tasks simultaneously. The MOS- PSS and PES were used to assess pain severity and interference. Gait velocity was assessed with an electronic gait mat, cognitive accuracy was measured using the rate of correct letter generation. Linear mixed effects models revealed that HbO2 increased in DTW compared to STW ($p < .001$) and Alpha ($p < .05$). The presence of perceived pain was associated with an attenuated increase in HbO2 from Alpha to DTW ($p < .05$). Amongst those with pain, worse pain severity was associated with an attenuated increase in HbO2 from STW to DTW ($p < .001$). Pain interference did not moderate the increase in HbO2 from single to dual tasks. Pain did not have a moderating effect on behavioral outcomes. These results indicate that task-related changes in the hemodynamic response in the prefrontal cortex during walking may be a sensitive marker to the effects of subjective pain on brain function in older adults.