The Effect of Walking Demands on Accuracy and Brain Activation Levels during the Modified Stroop Task

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Introduction

• Use of the modified Stroop task and self-paced treadmill walking provides promise in understanding changes in neural activation in older adults that affect fall risk, however few studies exist with this particular paradigm.

• It is previously seen that activation tends to be bilateral with mitigation of task related and unrelated information done by the Dorsolateral Prefrontal Cortex (DLPFC) [1] [4].

• Effect of the DLPFC can be measured using the Modified Stroop Task and visualized invasively using an fNIRS device [3].

• In different previous dual tasking paradigms, significant drops in accuracy and increases in DLPFC activation are seen [3] [4].

• This paradigm will allow us to take a deeper look into the changes in response accuracy and brain activation that occur in an effort to understand the effect multitasking has on the neural capacity of older adults.

Modified Stroop Task Outline

Sample Cues for the Modified Stroop Task [4]

Accuracy Results

Side by side comparison of the accuracy changes seen in each of the trials in the Modified Stroop task when moving from standing to walking.

Oxygenation Results

Side by side comparison of the activation changes seen in LDLPPC, MLPPC, RDLPFC for each of the trials in the Modified Stroop task when moving from standing to walking.

References


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