

# Exploring the Link Between Cerebral Perfusion during Sit-to-Stand and Cognitive Function in People After Stroke

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**Introduction.** People post-stroke have an increased risk of cognitive impairment, potentially linked to cerebral blood flow (CBF) dysregulation. While CBF impairment is associated with dementia, its response to physiologic challenges like sit-to-stand transitions and its relationship to cognitive function remains unexplored in chronic stroke. We hypothesized that people post-stroke would show a decreased CBF response during a sit-to-stand transition and would show a positive correlation between CBF during sit-to-stand and cognition.

**Methods.** We conducted a retrospective analysis from existing data. We assessed CBF as the mean middle cerebral artery velocity (MCAv) during sit-to-stand. Montreal Cognitive Assessment (MoCA) assessed cognition.

**Results.** Forty-eight individuals with chronic stroke and 27 age-similar healthy adults were included. Participants with chronic stroke showed significantly lower MoCA scores than healthy controls ( $p < 0.0001$ ). No between group differences existed for the drop or minimum value in MCAv after standing. Controls showed a moderate positive correlation between minimum MCAv and MoCA ( $p = 0.013$ ), while individuals with chronic stroke showed no correlation between minimum MCAv and MoCA.

**Conclusions.** In healthy adults, a moderate positive correlation was observed between minimum MCAv and MoCA, suggesting a potential link between cerebral blood flow regulation and cognition. However, this relationship was absent in individuals with chronic stroke, indicating that cerebrovascular responses to orthostatic stress may not contribute to cognitive function in this population. These findings highlight potential differences in cerebrovascular regulation post-stroke and its relevance to cognitive impairment.

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