



## AAN 72<sup>nd</sup> ANNUAL MEETING ABSTRACT

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**Abstract Title:** Cardiovascular Health across Young Adulthood, Cerebral Autoregulation and Cognitive Function in Midlife

**Press Release Title:** Heart Health Problems in Your 20s May Affect Brain Health Decades Later: Study Finds Healthier Heart Linked to Better Scores on Thinking and Memory Tests

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**Objective:** To assess the association of cardiovascular health (CVH) across young adulthood to midlife with dynamic cerebral autoregulation (dCA) and cognition in midlife.

**Background:** Vascular risk factors are closely linked to cerebrovascular damage and cognitive impairment in older adults. However, the significance of CVH through young adulthood in relation to dCA and cognition in midlife remains unknown.

**Design/Methods:** We studied 189 participants from the Coronary Artery Risk Development in Young Adults study (45% females; 45% blacks). Vascular risk factors were assessed during 30 years of follow-up through 8 in-person visits. At each visit, a CVH score (range 0-10) was calculated using smoking, BMI, blood pressure, total cholesterol, and fasting glucose. At Year 30 (Y30) examination, dCA was calculated as the transfer function phase of the spontaneous oscillations in blood pressure and flow velocity in the middle cerebral artery using transcranial Doppler ultrasound. Cognition was assessed at Y30 using a series of neuropsychological tests. Multivariate linear regression models were used to assess the association of CVH at each visit with dCA and cognition.

**Results:** Mean age at baseline (Y0) and Y30 were 24±4 and 54±4years, respectively. A better CVH at Y0 and Year 7 was associated with higher phase (better dCA,  $\beta=3.55$ ;  $p=0.006$  and  $\beta=3.48$ ;  $p=0.005$ , respectively). This association was the most robust at baseline compared to consecutive visits (baseline  $\beta=3.55$ ;  $p=0.006$  vs Y30



$\beta=1.704$ ;  $p=0.091$ ). Higher CVH score at baseline was associated with better cognitive performance in memory ( $\beta=0.51$ ;  $p<0.05$ ), attention ( $\beta=2.21$ ;  $p<0.01$ ), and executive (for Trails-B  $\beta=0.05$ ;  $p<0.05$  and for Stroop  $\beta=0.07$ ;  $p<0.05$ ) cognitive domains. All associations were independent of socio-demographics and education.

**Conclusions:** We show a graded association between CVH during young adulthood and better dCA and cognition in midlife. A life course approach must be used to further disentangle the mechanisms underlying the impact of vascular risk factors on brain health.

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