

Insulin resistance linked to brain health in elderly

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New research from Uppsala University shows that reduced insulin sensitivity is linked to smaller brain size and deteriorated language skills in seniors. The findings are now published in the scientific journal *Diabetes Care*.

The main hormonal function of insulin is to support the uptake and use of glucose in muscles and fat tissues. However, in an earlier article recently published in *Molecular Neurobiology*, Christian Benedict from the Department of Neuroscience at Uppsala University has reported that when insulin reaches the brain, it enhances [memory function](#) in humans. As insulin's capacity to stimulate [glucose metabolism](#) generally declines with age, it may also be that it affects the rate of cognitive aging in seniors.

In a new study, Christian Benedict, together with colleagues from Uppsala University (Samantha Brooks, Håkan Ahlström, Lars Lind, and Helgi Schiöth), the UK, and the US, have systematically studied 331 men and women at the age of 75 years. The researchers examined whether insulin sensitivity is tied to brain health. The brain structure of each participant was measured using magnetic imaging technology, so-called MRT, and their language skills were tested by asking them to name as many animals as possible in one minute (so-called verbal fluency).

"We found that in elderly whose insulin sensitivity was still high, the brains were larger, and they had more grey matter in regions that are

important for language skills, compared with those who had diminished insulin sensitivity. We also observed that higher insulin sensitivity was associated with better scores on the language test. Our findings offer a possible explanation for why methods that improve [insulin sensitivity](#), such as exercise, are promising strategies for counteracting cognitive aging late in life," says Christian Benedict.

More information: The data for the study were taken from the major epidemiological study Prospective Investigation of the Vasculature in Uppsala Seniors (PIVUS). www.medsci.uu.se/pivus/pivus.htm

Benedict C et al. Impaired insulin sensitivity as indexed by the HOMA score is associated with deficits in verbal fluency and temporal lobe gray matter volume in elderly. *Diabetes Care*, in press.

Provided by Uppsala University

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