

Lifestyle factors linked to brain health of young adults

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Researchers from the University of Oxford, in collaboration with researchers from Canada and the Universities of Bristol and London, have used advanced magnetic resonance imaging to investigate whether factors such as blood pressure, fitness, smoking and alcohol intake during young adult life are associated with changes in the blood vessels inside the brain.

The British Heart Foundation and Wellcome Trust funded study, which took place at the Cardiovascular Clinical Research Facility at Oxford's John Radcliffe Hospital, involved 125 [young adults](#) between the ages of 18 and 40 years.

Participants with healthier cardiovascular risk profiles, such as those with optimal blood pressure who are following the UK's Chief Medical Officers' public health guidelines for exercise participation and lower alcohol intake were found to have higher density of blood vessels in the brain as well as higher brain blood flow and fewer white matter hyperintensity lesions; which have been associated with a higher risk of stroke and dementia in later life.

Professor Paul Leeson, Professor of Cardiovascular Medicine at the University of Oxford, who led the research commented: "We have known for some time that lifestyle during young adult life is relevant to the health of the heart. This new research is exciting because we have been able to show that similar factors may also be impacting on the health of the brain, decades earlier than previously anticipated."

Dr. Wilby Williamson, Sports and Exercise Medicine Physician and Clinical Research Fellow in Cardiovascular Medicine at the University

of Oxford, who helped deliver the study and is a co-author commented: "Young adult cardiovascular health is often a neglected area. This study is a first step towards personalized risk assessment so we can better inform people about steps to improve their future brain health."

Dr. Charlie Foster, Chair of the UK Chief Medical Officers Expert Committee for Physical activity commented: "This study suggests regular exercise, sensible drinking, not smoking, and keeping blood pressure at healthy levels can have wide spread benefits for both heart and brain disease and that Health choices have real impact and benefits at any age."

"It also demonstrates the power and utility of medical imaging to better understand how specific risk factors relate to early brain changes," commented study co-author Dr. Adam Lewandowski, who is a British Heart Foundation Research Fellow and University Research Lecturer at the University of Oxford.

Professor Jeremy Pearson, associate medical director at the British Heart Foundation, said: "The risk of heart disease and stroke is known to be affected by external factors from early childhood onwards even though clinical events usually occur only in later life.

"This study in healthy young adults shows clearly that there are already detectable changes in [blood vessels](#) in the brain likely to increase risk of subsequent stroke in those with the highest level of modifiable risk factors such as smoking and high BMI.

"It strengthens the evidence that leading a lifestyle to keep your heart healthy is important throughout life."

Dr. Foster, Dr. Lewandowski, Dr. Williamson and Professor Paul Leeson are currently using the advanced imaging techniques available in

Oxford in a trial in young adults with higher [blood pressure](#). The study will help determine the best ways to change lifestyle to improve brain and heart health.

The full paper, "Association of Cardiovascular Risk Factors With MRI Indices of Cerebrovascular Structure and Function and White Matter Hyperintensities in Young Adults," is published in the *Journal of the American Medical Association*.

More information: Association of Cardiovascular Risk Factors With MRI Indices of Cerebrovascular Structure and Function and White Matter Hyperintensities in Young Adults. *JAMA*. [DOI: 10.1001/jama.2018.11498](#)

Provided by University of Oxford

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