Brain and body both linked to cardiovascular health

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The slow, precise demands of research can be frustrating – but there are times the work becomes personal, and then it takes on a greater urgency.

Nárlon C. Boa Sorte Silva, is researching the benefits of exercise for older adults with high blood pressure or hypertension, which puts them

at a higher risk for diseases such as dementia.

"The inspiration comes from my grandmother, the person who raised me," said Boa Sorte Silva.

"She recently couldn't recognize who I was when I called her, didn't know where I was or who I was.

"While this tells you that it's personal, how many other families out there are dealing with the same issue? This is something where works needs to be done. So, when you get funding and look at the perspective for the study, the people you are collaborating with, and you know the importance of it, you can't excuse yourself, you have to do the work. You have to put forward that effort."

His new two-year study, expected to begin in February, is helped by funding from the Heart and Stroke Foundation's Grant-in-Aid program, which supports novel research in the areas of heart disease and stroke.

The project is based on a previous study in which Boa Sorte Silva showed mind-motor training – activities that engage cognitive function and movement simultaneously – plus regular exercise helped older adults stave off the effects of dementia more than just regular exercise alone.

These findings led him to focus this time only on older adults with cardiovascular disease to discover if high-intensity exercise offers more potential than just regular exercise.

Schulich School of Medicine & Dentistry and Kinesiology professor Robert Petrella, who is leading the project, said exercise affects people's morbidity and mobility – and 'cardiovascular' means more than just blood pressure, but also brain function.

By 2035, one-third of the Canadian population will be older than 60, and by the time we reach 80 years old,90 per cent of us will have high blood pressure.

The study is examining whether exercise modifies blood pressure and brain function – and, if so, whether it makes a difference how often people exercise, and with what intensity.

"When you have high blood pressure it does something to your blood vessels, it makes them thicker and less compliant, more stiff," added Petrella, whose father has dementia. "When you exercise and lower blood pressure, you make them more compliant and regulated. Exercise will modify how these blood vessels function and will improve how blood vessels function in the brain.

"It can feed the brain, the regions that may be a little more susceptible to memory impairment and may be under stress, and by giving exercise as a treatment, you make the bloodflow more efficient to those who need it the most."

Boa Sorte Silva said this study will examine, with accurate heart monitoring sessions, what exercise is ideal for the body and the brain.

The project will test brain function, with the help of Western's Adrian Owen and Cambridge Brain Sciences, to determine in which specific parts of the brain any changes may be taking place, and how much of it is attributable to exercise.

The dementia-cardiovascular link may become a greater issue in coming decades.

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While 564,000 Canadians are currently living with dementia, that number will grow closer to a million within 15 years. Almost seven in 10 of those diagnosed with dementia over the age of 65 are women. Current, dementia-related expenses to the Canadian economy stand at $10.4 billion.

"We believe by targeting this population with a steady design to improve their health it, perhaps, can prevent dementia in that demographic," said Boa Sorte Silva. "The nature of our work is to be multidimensional and look at the problem with a broader perspective and target the points that can be addressed."

Provided by University of Western Ontario