

# Ageing Brains Show Great Promise for Rejuvenation

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(PhysOrg.com) -- UQ neuroscientists have, for the first time, been able to demonstrate that moderate exercise significantly increases the number of neural stem cells in the ageing brain.

In research published in *Stem Cells*, Dr Daniel Blackmore and his colleagues at the Queensland [Brain](#) Institute (QBI) have shown that moderate exercise directly increases the number of stem cells in the ageing brain.

Despite the conventional wisdom that we only have a set number of neurons or [brain cells](#), neuroscientists have known for some time that, in healthy brains, the creation of new neurons is an ongoing and lifelong mechanism.

However, it has also been known for more than a decade that the number of new neurons we produce slowly declines with age.

According to QBI neuroscientist Dr Blackmore, researchers are interested in finding ways to stimulate the production of neurons to negate any decline brought about by age or disease.

"Our findings suggest that moderate exercise, from early to late in life, can have a very positive effect," Dr Blackmore said.

In controlled models of ageing, the number of [neural stem cells](#) produced by animals participating in voluntary exercise (running wheel)

were significantly higher than in animals of the same age which did not exercise (no running wheel).

"Investigating the mechanism by which neural stem cell numbers are altered will undoubtedly increase our understanding of how the brain responds to its environment," Dr Blackmore said.

"Ultimately, this should allow us to discover how to harness the brain's regenerative capacity, and to bring about new and effective treatments for conditions caused by trauma, disease, or even normal ageing."

"The brain's ability, even at an advanced age, to respond in a positive manner is very exciting as it extends the time-frame in which manipulation is possible."

QBI Director Professor Perry Bartlett FAA said the research represented another significant understanding of the why neural stem cells were so important to brain function.

"It is the first experimental data that shows how we can change the propensity of the brain to make new neurons through increasing the number of stem cells - even in the aged animal," Professor Bartlett said.

"We can now show that exercise directly causes an increase in the number of stem cells in the brain.

"Stem cells develop into neurons and a good supply of [neurons](#) is essential for good mental health," he said.

The research paper "[Exercise](#) increases neural stem cell number in a GH-dependent manner, augmenting the regenerative response in aged mice" by Dr Daniel Blackmore, Dr Mohammad Golmohammadi, Beatrice Large, Dr Michael Waters and Dr Rodney Rietze appeared in the 14

May online edition of [Stem Cells](#).

Provided by University of Queensland ([news](#) : [web](#))

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