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Aerobic exercise can rejuvenate ageing brain

[Aerobic exercise effects on cognitive and neural plasticity in older adults Br J Sports Med 2008; doi 10.1136/bjism.2008.052498]

Regular aerobic exercise not only staves off the decline in brain power associated with ageing, but it can also reverse it, suggests a leading cognitive neuroscientist in the *British Journal of Sports Medicine*.

Writing in the journal, ahead of print, Professor Art Kramer of the US Beckman Institute at the University of Illinois, argues that there is now a substantial body of research which shows the benefits of aerobic exercise and physical activity on the ageing brain.

A deterioration in white and grey matter in particular regions of the brain in people as they age causes cognitive decline, with the greatest effects seen in what is referred to as “executive control.”

This describes activities such as task coordination, planning, goal maintenance, working memory, and the ability to switch tasks.

But, says Professor Kramer, the research shows that these are the very processes that are most amenable to treatment by exercise.

Several studies show that regular moderate exercise, of the type to make a person breathless, boosts the speed and sharpness of thought (cognitive performance), the actual volume of brain tissue, and the way in which the brain functions.

And the research shows that it can do this in people with Alzheimer’s disease as well as in those without signs of progressive brain disease.

Professor Kramer cites particular pieces of previously published research, which show that six months of aerobic exercise reversed age related decline, and that the brains of older adults retain the capacity to grow and develop, known as plasticity.

Other published research has also shown that physically fitter adults have less evidence of a deterioration in grey matter (the thinking bit) than their less physically fit contemporaries.

A tailing off in levels of the female hormone oestrogen in women going through the menopause is often associated with poorer memory and declining brain power.

But another study, cited by Professor Kramer, shows that physically fitter women had more grey matter and performed better on measures of executive control than their less physically fit peers, irrespective of whether hormone replacement therapy had been used.

Although many questions remain unanswered, Professor Kramer concludes: "We can safely argue that an active lifestyle with moderate amounts of aerobic activity will likely improve cognitive and brain function, and reverse the neural decay frequently observed in older adults."

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