

Exercise's brain benefits

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(PhysOrg.com) -- Athletes have long known about the natural "high" exercise can induce. Now, for the first time, medical researchers have demonstrated that exercise can reverse the effects in the brain of psychological trauma experienced early in life.

Exercise can ameliorate anxiety and depression-like behaviours induced by an adverse early-life environment by altering the [chemical composition](#) in the hippocampus - the part of the brain that regulates [stress response](#), researchers from UNSW have found.

The findings, derived from studies on lab rats, are further evidence of the plasticity of the brain and its ability to re-map neural networks. Previous studies from UNSW's School of Medical Sciences have shown that comfort eating - eating palatable food rich in fat and sugar - achieves similar results.

With many [neurological diseases](#) displaying origins in early life, the researchers believe the results could provide clues for novel ways to tackle a range of mood and behaviour disorders.

“What’s exciting about this is that we are able to reverse a behavioural deficit that was caused by a traumatic event early in life, simply through exercise,” said Professor of Pharmacology Margaret Morris, who will present the findings this week at the International Congress of Obesity in Stockholm.

In the study, rats were divided into groups and either isolated from their

mothers for controlled periods of time to induce stress or given normal maternal contact. Half were given access to a running wheel.

In addition to being more anxious, animals that were subjected to stress early in life had higher levels of stress hormones and fewer steroid receptors in the part of the brain controlling behaviour.

“Both the anxious behaviour and the levels of hormones in these rats were reversed with access to the exercise wheel,” Professor Morris said.

“We know that exercise can elevate mood, but here we are seeing chemical changes that may underpin this improvement. One of these is increases in brain-derived neurotrophic factor (BDNF), which helps nerve cells grow.

“Many neurological diseases appear to have their origins early in life. [Stress](#) hormones affect the way nerve cells grow in the brain. This discovery may be giving us a clue about a different way to tackle a range of conditions that affect mood and behaviour,” she said.

“Here we also compared effects of [exercise](#) to eating palatable food, and it was equally effective, suggesting there’s a more healthy option as an alternative.”

A paper detailing the work appears this month in the journal *Psychoneuroendocrinology*.

Provided by University of New South Wales

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