

Resistance exercises recover motor and memory impairment caused by flavor enhancer

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A study in rats, published in *Experimental Physiology*, showed that resistance exercise recovers memory and motor impairment caused by the flavour enhancer monosodium glutamate.

Monosodium glutamate (MSG) is an additive that mimics umami flavour, the fifth taste aside from sweet, sour, salty and bitter. Some studies have shown MSG to have adverse effects in humans, making it important to understand how it works in the body. Giving MSG to new-born [rats](#) has previously been shown to cause motor and memory impairment.

The team of researchers at the Federal University of Santa Maria in Brazil gave the experimental group of new-born rats a dose of MSG. This dose is not comparable to the dose humans eat.

Of the rats that were given MSG, half began a [resistance exercise](#) regimen at two months of age. The exercise consisted of climbing a ladder at an 80 degree angle. The rats performed these exercises five times per week for seven weeks.

After resistance exercise, researchers tested the rats' motor coordination and memory. Within the group injected with MSG, [motor coordination](#) was less impaired in both male and [female rats](#) that performed resistance exercise. Memory also improved in both male and female rats, but it was

a different type of memory in the two sexes. Recognition memory improved in male rats, whereas female rats had improved location memory.

To test both types of memory, researchers present rats with two objects. To test [recognition memory](#), one object is replaced with a new one. To test location memory, one object is moved to a new location.

The next question that Cristina Wayne Nogueira, lead investigator, and her team will explore is the mechanism of [memory](#) improvement.

Commenting on the study, Nogueira said: 'This study highlights that resistance-based exercise improves cognitive deficit induced by a flavour enhancer. Our next goal is to understand how this is happening.'

More information: Paulo Cesar Oliveira Araujo et al, Resistance exercise reduces memory impairment induced by monosodium glutamate in male and female rats, *Experimental Physiology* (2017). [DOI: 10.1113/EP086198](https://doi.org/10.1113/EP086198)

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