

Excessive exercise can be addicting, new study says

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Although exercise is good for your health, extreme exercise may be physically addicting. Rats given a drug that produces withdrawal in heroin addicts went into withdrawal after running excessively in exercise wheels, according to new research. Rats that ran the hardest had the most severe withdrawal symptoms.

The scientists who conducted the study reason that if excessive [exercise](#) is addicting, then maybe, to feel good, addicts could take moderate exercise instead of drugs. The findings also shed light on the potentially fatal eating disorder called anorexia athletica, in which exercise undertaken to shed pounds becomes as compulsive as taking drugs, resulting in even greater weight loss.

"Excessive running shares similarities with drug-taking behavior," the researchers wrote in the August issue of *Behavioral Neuroscience*, published by the American Psychological Association.

For those looking for an excuse to hit the couch, however, this study looked at excessive, not moderate, exercise. "As with food intake and other parts of life, moderation seems to be the key. Exercise, as long as it doesn't interfere with other aspects of one's life, is a good thing with respect to both physical and mental health," said lead author Robin Kanarek, PhD, of Tufts University.

For several weeks, 44 male and 40 female rats were allowed to either run in exercise wheels or remain inactive. To simulate anorexia athletica, the

researchers divided the active and inactive rats into groups whose members were either given food for one hour a day or around the clock. Rats in all four groups were then given naloxone, a medicine for heroin overdose that produces immediate withdrawal symptoms.

Active and inactive rats responded very differently to naloxone, which was given in proportion to their weight. The active rats showed withdrawal symptoms like those seen in narcotics addicts: trembling, writhing, teeth chattering, and drooping eyelids.

The active rats who had access to food for only one hour a day both ran the most and displayed the most severe withdrawal symptoms. Like people with anorexia athletica, they ran so much that they lost significant amounts of weight. Additionally, the more a given rat had run, the worse its withdrawal symptoms after naloxone. In contrast, regardless of how much they ate, inactive rats responded very little to the drug.

Because of the way the active rats responded to naloxone, they seemed to have undergone the same changes in the brain's reward system as rats addicted to drugs. "Exercise, like drugs of abuse, leads to the release of neurotransmitters such as endorphins and dopamine, which are involved with a sense of reward," noted Kanarek.

Insights into behaviors that trigger the release of the brain's "reward" chemicals may lead to addiction treatments that incorporate moderate exercise, according to the researchers. The findings also suggest that active rats given limited food may make a good experimental model for studying and developing treatments for anorexia athletica, added Kanarek.

Because [rats](#) and humans share many nervous-system traits, researchers frequently carry laboratory findings like these out into the real world.

More information: "Running and Addiction: Precipitated Withdrawal in a Rat Model of Activity-Based Anorexia," Robin B. Kanarek, PhD, Kristen E. D'Anci, PhD, Nicole Jurdak, MS, and Wendy Foulds Mathes, PhD, Tufts University; [Behavioral Neuroscience](#), Vol. 123, No. 4.

Source: American Psychological Association ([news](#) : [web](#))

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