Exercise helps treat addiction by altering brain's dopamine system

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Research by Panayotis Thanos suggests that aerobic exercise can help to treat, and even prevent, addiction. Credit: University at Buffalo

New research by the University at Buffalo Research Institute on Addictions has identified a key mechanism in how aerobic exercise can

help impact the brain in ways that may support treatment—and even prevention strategies—for addiction.

Also known as "cardio," aerobic exercise is brisk exercise that increases heart rate, breathing and circulation of oxygen through the blood, and is associated with decreasing many negative health issues, including diabetes, heart disease and arthritis. It also is linked to numerous mental health benefits, such as reducing stress, anxiety and depression.

"Several studies have shown that, in addition to these benefits, aerobic exercise has been effective in preventing the start, increase and relapse of substance use in a number of categories, including alcohol, nicotine, stimulants and opioids," says Panayotis (Peter) Thanos, PhD, RIA senior research scientist and senior author of the study. "Our work seeks to help identify the underlying neurobiological mechanisms driving these changes."

Using animal models, Thanos and his team of researchers found that daily aerobic exercise altered the mesolimbic dopamine pathway in the brain. Dopamine is a key neurotransmitter associated with substance use disorders, playing an important role in reward, motivation and learning.

"Current work is looking at whether exercise can normalize dopamine signaling that has been changed by chronic drug use, as this may provide key support of how exercise could serve as a treatment strategy for substance abuse," he says.

"Further studies that focus on people with substance use disorders should help researchers develop new methods to integrate exercise into treatment regimens that may help prevent relapses," Thanos adds.

Provided by University at Buffalo