

Study finds long-term anabolic-androgenic steroid use may impact visuospatial memory

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The long-term use of anabolic-androgenic steroids (AAS) may severely impact the user's ability to accurately recall the shapes and spatial relationships of objects, according to a recent study conducted by McLean Hospital and Harvard Medical School investigators.

In the study, published today online in the journal *Drug and Alcohol Dependence*, McLean Hospital Research Psychiatrist Harrison Pope, MD, used a variety of tests to determine whether AAS users developed cognitive defects due to their admitted history of abuse.

"Our work clearly shows that while some areas of [brain function](#) appear to be unaffected by the use of AAS, users performed significantly worse on the visuospatial tests that were administered. Those deficits directly corresponded to their length of use of anabolic-androgenic steroids," explained Pope. "Impaired visuospatial memory means that a person might have difficulty, for example, in remembering how to find a location, such as an address on a street or a room in a building."

The study looked at 44 individuals whose ages ranged from 29-55, with 31 having used AAS for an average of seven years. Each participant was asked to complete five [cognitive tests](#) that assessed a wide range of brain functions, including memory for shapes and locations of objects, memory for lists of words, reaction time, ability to maintain attention, and speed of information processing .

Pope and his colleagues discovered that those participants who were long-

term AAS users did significantly worse than nonusers on a test called "Pattern [Recognition Memory](#)," where participants are asked to try to remember a collection of patterns that they have been presented on a computer screen. The scores on this test declined noticeably with increasing lifetime AAS dose. These results remained stable in sensitivity analyses addressing potential confounding factors, indicating that the findings were unlikely to be attributable to some factor other than AAS use.

Pope explained, "We have seen a significant rise in AAS use within the general population over the last 20 years, and are finding that people are taking doses that are often 10 times stronger than those typically used in the 1960s and 70s. We are worried that with higher doses of AAS and longer periods of lifetime exposure, some people might even eventually develop visuospatial deficits similar to those sometimes seen in elderly people with dementia, who can become easily become lost or disoriented. "

According to Pope, science still knows very little about the very long-term effects of AAS abuse, so few in fact that the McLean team did not know if they would even find that the extended use of AAS resulted in any [cognitive defects](#). "The magnitude of our findings was quite shocking and we hope that they will lead to larger studies and increased awareness regarding the possible dangers of the use and abuse of AAS," said Pope.

Provided by McLean Hospital

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