Uncovering how dabbing cannabis can impair driving ability

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The van that the research team uses to conduct tests on participants. Credit: Colorado State University

Researchers studying how an intense cannabis consumption method could impair driving ability have turned to a simple device that many people have lying around their homes.

Colorado State University faculty member Brian Tracy is collaborating with a group of researchers at the University of Colorado Boulder to study the effects of dabbing, a highly potent method of ingesting cannabis. In a first-of-its kind project that could eventually help prevent driving under the influence, they are examining how dabbing affects things like balance, movement ability and reaction time—and they're

using an Apple iPod for several of the measurements.

Tracy created four of the tests being administered to the research subjects. He's using the gyroscope and accelerometer in the iPod Touch to measure bodily movements, and the widely available device is proving just as accurate as equipment costing thousands of dollars more.

About dabbing

Dabbing is the vaporization and inhalation of cannabis concentrates, and users report that dabs provide an immediate rush, which could affect their ability to drive safely.

"Users get very high, very rapidly," Tracy said. "It's almost instantaneous, and the feeling is very strong."

The iPod is attached to the lower leg to measure reaction times. Credit: Colorado State University

The problem is, there has been little to no research on the physical and

health-related effects of dabbing, like its impact on driving ability, so the results of the new study are expected to be groundbreaking.

By advertising for participants, the team identifies existing dabbers who agree to be studied. Using a van outfitted with testing equipment, researchers have been traveling around the Boulder area for several months to test those participants at a prearranged time when the subjects plan to be dabbing. The research team parks outside participants' homes to conduct an initial set of tests that establish their sober baseline, and then after the subjects dab inside their homes, they return to the van to undergo the same tests under the influence.

The study only involves participants who have dabbed before; the team isn't involved with handling or dispensing the drug to participants.

"The team is not providing or administering the cannabis," Tracy said. "The subjects are doing what they would normally do, to themselves. It's an observational study."

First study of its kind

The three-year project, called "Effects of Dabbing on Marijuana Intoxication, Driving and Cognition," was funded by a $839,500 grant from the Colorado Department of Public Health and Environment to researchers at CU. It is the first study of dabbing's effect on motor function and reaction time.

A research assistant poses during a mock experiment. Credit: Colorado State University

The tests that Tracy provided are focused on movement ability. His tests measure subjects' ability to maintain balance and rapidly move a leg, tap a finger and move an arm. An app collects the data using the sensors built into the iPod Touch, which can be affixed to the participant's body during the tests.

"Testing has shown that this $200 iPod Touch is just as accurate as the high-tech $1,000 accelerometer I have in my lab," he said. "And the accelerometer can't leave the lab, because it is connected to very expensive equipment and amplifiers that are not easily portable. The iPod is both inexpensive and portable, so it opens up access to researchers in many different settings."

The ballistic leg movement test measures how quickly participants can move their leg, similar to the motion of lifting one's foot off the gas pedal. The second test tracks participants' neuromotor speed by measuring their rate of finger tapping. In the balance task, participants try to stand steady, with their eyes open and then closed, to measure their

postural stability. The last test, the ballistic arm punch, measures subjects' peak acceleration and reaction time, which can relate to how quickly they'd be able to turn a steering wheel under the influence.

In total, participants complete 10 tests, so researchers can get an accurate read on the participants' overall cognitive and movement ability—both when they're sober and when they're high.

Recreational marijuana has been approved by voters in Colorado, Oregon, Washington, Maine, California, Massachusetts, Nevada, Alaska and Washington, D.C., so it's becoming increasingly important to learn more about this method of consuming cannabis.

Provided by Colorado State University