

## **DRIVING PERFORMANCE AT CLINICALLY EFFECTIVE CANNABIS DOSES FOR THE TREATMENT OF MS SPASTICITY**

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**OBJECTIVE:** Cannabis may improve spasticity associated with multiple sclerosis (MS). Despite its psychoactive effects, little is known about the impact on driving abilities when smoked at doses yielding clinical benefits. The aim of this study was to determine the effects of such dosing levels on driving performance.

**PARTICIPANTS AND METHODS:** Seventeen drivers with complaints of spasticity and at least moderate increase in tone (Modified Ashworth Spasticity (MAS) Scale  $\geq 3$ ) were recruited from a 2-week, 8-visit, randomized, double blind, placebo-controlled, crossover study of smoked cannabis for MS spasticity (Corey-Bloom et al., 2012). In the parent study, participants completed a baseline assessment, 3 days of treatment with 4% THC cannabis (CA) or placebo (PL), an 11-day washout period, and 3 days of CA or PL. The parent study demonstrated improved spasticity following treatment. Driving simulations assessing 1) car following and 2) lane tracking/divided attention (LT/DA) were completed at baseline, as well as 2/3 hours post-treatment and the next morning at the end of each CA/PL week.

**RESULTS:** There was no difference between CA or PL conditions in the ability to follow the lead car, nor reaction time to lead car speed changes, although on CA participants drove closer to the lead car and had a shorter time-to-collision. While on CA, participants demonstrated more in-lane variability, and were more likely to provide an incorrect or missed response to the DA stimulus. Most of these effects were absent the following morning. Higher mg/kg of THC was associated with worse performance on the LT/DA simulations. A reduction in the MAS was associated with faster reaction to lead car changes and less lane variability.

**CONCLUSIONS:** Treatment with cannabis at levels that improve MS-related spasticity results in acute (negative) effects on the most challenging driving tasks, but also better performance in select aspects of driving.

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