

## Training inhibitory control in older drivers: The effect on cognitive ability and driving performance.

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### ABSTRACT

Executive functions are important for driving, however, older drivers can experience a decrease in these functions. Since mobility is essential for quality of life, it is important to keep drivers safe drivers as long as possible. Several studies have indicated the value of training executive functions (Spierer et al. 2013; Lustig et al. 2007; Nouchi et al. 2012). The aim of the present study was to investigate whether a training of inhibition in older drivers would enhance cognitive ability and translate into enhanced driving performance. In addition to a pretest and posttest at the Transportation Research Institute, each participant conducted a computer based inhibition training at home during 25 consecutive days. During the pretest and posttest, computer based cognitive tasks and a ride in a fixed-based medium-fidelity driving simulator (STISIM M400; Systems Technology Incorporated) were conducted. The cognitive tasks included the Useful Field of View (UFOV), the Stop Signal Task (SST) and the Posner task. The simulated drive included situations that are known to be difficult for older drivers, for example turning left at an intersection. Specific driving measures were analyzed, like gap acceptance. Repeated measures ANCOVA's were conducted to determine the effects of the inhibition training on both cognitive ability and driving ability. Fifty-nine older drivers participated in the study. Due to drop-out and simulator sickness, 42 participants remained in the sample. Participants were randomly assigned to a control group (N=20) or an experimental group (N=22). Participants were cognitively healthy (MMSE range 25-30, mean score 28.81) and had a mean age of 73.95 years. The results of the training on both cognitive ability and driving ability will be discussed. These findings have implications for prevention and intervention.

**Keywords:** older drivers, cognitive training, inhibitory control.

### Section Choice:

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|-------------------|-------------------------------------|-------------------------------|--------------------------|
| 1. Human Factors  | <input checked="" type="checkbox"/> | 3. Vehicle Engineering        | <input type="checkbox"/> |
| 2. Infrastructure | <input type="checkbox"/>            | 4. Traffic Management Systems | <input type="checkbox"/> |

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