Appendix B – Functional Instrument Justification

This appendix provides an overview of the functional testing instruments to be used in this study and their relationship to study goals and traffic safety applications. It is important to note scores on these tests will be linked with and compared to each participant's driving performance and exposure.

Please note that these instruments have undergone thorough validity (they test the domain they purport to test) and reliability (a person retaking the test would obtain a similar score) testing. They test subjects to determine 1) that they have been assigned to the appropriate study group, and 2) have the ability to safely operate a vehicle. These data are not considered "information" as defined under the PRA per *Memorandum For The Heads Of Executive Departments And Agencies And Independent Regulatory Agencies*, OMB Regulations, exemption 7 (see page 8), retrieved from https://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/PRAPrimer_04072010.pdf on August 7, 2015."

Countermeasures developed from the information collected in this study will include developing guidelines that State driver licensing agencies, health care professionals, and the general public can use in understanding the effects of physical activity on an older driver's crash risk, and determining the likelihood that increasing activity level will reduce such risk.

Domain	Description	Application to Traffic Safety
Executive Function	The ability to apply reasoning and problem solving for planning and decision making while driving. Executive functioning can decline in older adults, with more severe deficits found in those with dementia.	Declines in executive functioning make it difficult for drivers to respond appropriately, particularly in complex driving situations; confusion and difficulties with navigation (getting lost) often result when executive function is impaired.
Visual Search (with Divided Attention)	Attention is the awareness of selected elements of one's environment; divided attention is attention to multiple sets of elements so as to carry out multiple tasks concurrently.	A driver must rapidly and continuously scan the environment to detect and attend to the most safety-relevant stimuli, e.g., a traffic signals, signs, and road markings as well as other drivers, pedestrians, and cyclists.
Leg Strength & Stamina	The ability to use the accelerator and brake pedals effectively for smooth control of vehicle speed.	In normal traffic and in emergency situations, the ability to rapidly and accurately shift one's foot between the accelerator and brake pedals according to the demands of the moment is essential for safe driving.
Head/neck Flexibility	The ability to rapidly check in both directions for cross-traffic, and to look over the shoulder.	A driver needs to be able to scan to the sides and rear, including blind spots, before backing, merging, or changing lanes, and quickly check for conflicts from both directions at intersections.