



# Predicting fitness-to-drive in elderly drivers with cognitive impairments

**Judith Urlings**

**Transportation Research Institute**

**Hasselt University - BE**



Mr. V.





# Legislation in Belgium

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## Royal Decree : Driving License Sworn Statement

Condition ruling out fitness to drive?

Return license within 4 days

Fitness to drive is questionable?

1. Examination by a doctor
2. Referral to CARA (Belgian Road Safety Institute)

# The case of cognitive deterioration

## RD Appendix 6, Section II, 1.1.6

*The candidate with a physical, mental or cognitive disorder (either congenital, acquired or as a result of the aging proces) resulting in significantly deviant behavior, adaptation, judgement or perceptual skills or deviant psychomotor reactions is not fit to drive.*

## RD Appendix 6, Section I, 3

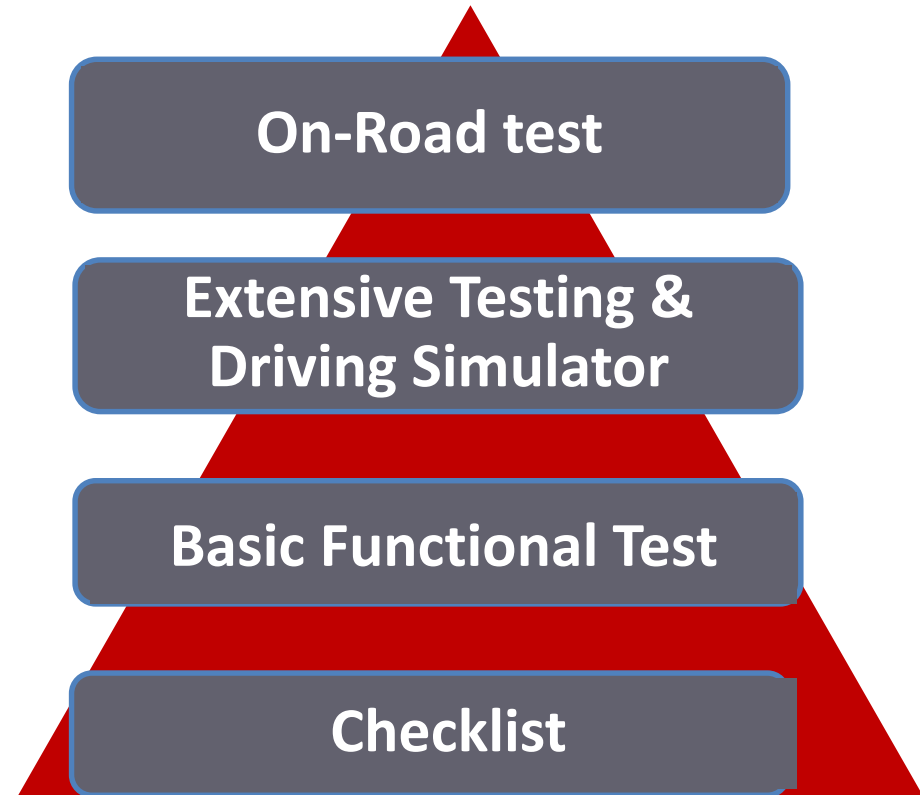
*Fitness to drive is determined after a medical examination in which all available methods within the medical practice can be used.*

# Current Referrals

65+ Candidates @ CARA:

92% Pass <sup>[1]</sup>

**Multidisciplinary  
Evaluation**



[1] Jaarverslag CARA, 2010

# Project Outline



**Which functional abilities can predict driving abilities in elderly drivers with cognitive decline?**



**Develop a set of maximum 5 functional tests that can be used in the doctors office to assess driving in the elderly**

# Step 1



**JESSA**  
ZIEKENHUIS

## Tests of Functional Abilities

- Visual Tests
- Physical Tests
- Cognitive Tests
- Knowledge of Road Signs

# Step 2



## Driving Simulator Test

- Simulator data
  - Lateral position
  - Reaction time
  - Etc.
- Test Ride for Investigating Practical Fitness to Drive (TRIP)



# Slide 3



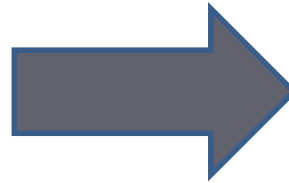
## On-road Evaluation

- **Classic pass/fail evaluation**
- **Test Ride for Investigating Practical Fitness to Drive (TRIP)**

# Outcome measures

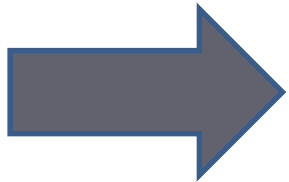
## DRIVING

**Fitness to Drive**



**Pass/ Fail Evaluation**

**Driving Abilities**



**Test Ride for  
Investigating Practical  
Fitness to Drive**

# Results: Participants

102



34

	Mean	SD
Age	78.6	5.4
Driving Experience	55.4	8.0
Mini Mental State Examination	26.9	2.4

# Results: On road Test

75



41

## Best Predictive Functional Tests

- Auditory Verbal Learning Test
- Visual Acuity – Snellen chart
- Clock Drawing
- Knowledge of Road Signs

# Results: TRIP subscales



**Simulator**

**Visual behavior 28%**

**Merging into traffic 27%**

**Anticipation skills 27%**



**On-road**

**Visual behavior 23%**

**General insight 18%**

**Anticipation skills 16%**



How can we improve and maintain driving abilities in elderly drivers experiencing cognitive decline?

**GOAL**

**TRAINING**

# Future: Training



- Visual behavior
- Anticipation skills

- Direct approach
- Indirect approach

Simulator training  
Cognitive training?

**Planned start: December 2015**

Thank You!



**THANKS  
FOR  
LISTENING**

**Questions?**

**Comments?**

**Suggestions?**