Driving in Early-Mid PD

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Driving

Typical sequence during driving:
1) Perceive and attends to stimulus and interprets what is on the road
2) Using previous driving experiences/memory and current situation, comes up with a plan
3) Executes action
4) Monitors the outcome of the behaviour for potential feedback for subsequent corrective actions
Driving Scenario: Approaching a roundabout

Action Initiation
Driver uses indicator, steering wheel and accelerator to navigate roundabout and then evaluates outcome

Option Generation
Possible options: Stop, slow down or proceed through roundabout

Option Selection
No hazards detected so driver decides to proceed
PD: Driving

Drivers with PD display challenges with on-road driving skills that require:

- Motor actions
- Trunk and head mobility
- Attention
- Visual perception (especially depth) and scanning
- Memory retrieval
- Rapid decision making
PD: Driving

The most important predictor of on-road failure and was significantly associated with:

- positioning and maneuvering (especially at low speed)
- adaptation at high speed
- change of direction (left turns and merging)
PD: Driving

Critical impairments in specific driving skills that lead to failure on road or simulator testing:

- problems keeping the car steady on the road at low speed
- Correlated motor functions
PD: Driving

Critical impairments in specific driving skills that lead to failure on road or simulator testing:

- Speed adaptations at high speed (constantly change their speed according to speed limits, speed of other cars and traffic density)
- Associated with reduced executive functions ("conductor" of all cognitive skills) and attention
PD: Driving

Critical impairments in specific driving skills that lead to failure on road or simulator testing:

- Left turn maneuvers—considered to be one of the most complex driving skills and main cause of car crashes in older adults
  - Associated with visual scanning, working memory, cognitive inhibition and selective attention
PD: Driving

Assessing the following, can to be predictive of on-road performance:

- Motor reactions
- Functional reach
- Contrast sensitivity
- Visual attention with task switching
- Useful Field of View
- Visual spatial skills
PD: Driving

Things to consider:

► Several studies report when pts pass the in clinic driving assessments, they are fit to drive

► However, pts that fail the in clinic assessments, may have a chance to pass the on road/stimulators assessment due to doing the activity in the context
PD: Driving

Things to consider:

- Visuospatial dysfunction is specifically associated to fatigue and not other aspects of cognition or general cognitive function.
PD: Driving

driving rehabilitation:

- Contextual (On-road and driving simulators) focus on:
  - Vehicle control
  - Speed adaptation
  - Left turns

- Non-contextual (in clinic) focus on:
  - Motor deficits (PT)
  - Executive dysfunction and attention (SLP)
  - Visuospatial impairments and visual scanning (OT)
PD: Driving

Maintaining driving with safe behaviors:

- Eliminate night driving
- Drive during "ON" times
- Do not drive when fatigued
- Do not drive when stressed
- Short durations
- Familiar routes
- Low traffic areas and times
- Limit distraction (No music or radio)
- Side seat driver-verbal and auditory cues
Maintaining driving with technology:
- Back up, and side view cameras
- Back up, and side radar sensors
- Lane keep-assist
- Adaptive cruise control
- Collision warning system
- Electronic stability control
- Active park assist
- Drowsiness alert
- Adaptive headlights
8 Tech Features That Improve Car Safety

**Lane-Keep Assist**
Detects lane departure and steers vehicle back into the correct lane.

**Adaptive Cruise Control**
Monitors the driver-set speed and distance to the vehicle ahead.

**Adaptive Headlights**
Improve forward illumination based on road conditions.

**Electronic Stability Control**
Slows individual wheels during a turn to keep car on course.

**Collision Warning System**
Alerts the driver if a collision is imminent.

**Active Park Assist**
Helps parallel park the vehicle with no steering from the driver.

**360-Degree Camera**
Improves visibility when backing up or parking.

**Drowsiness Alert**
Uses automobile or driver data to indicate when you need a break.

Get help finding your next vehicle at usaa.com/carbuying.
PD: Driving

Alternatives to driving:

- Public transportation (Trimet Lift)
- Ride services Lyft, Uber, ride connect
- Family and friends