The Virtual Supermarket

Virtual Shopping for Realistic Assessment of Cognitive Function - Virtual Reality in Cognitive Rehabilitation

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Stroke

Stroke is a dysfunction of the brain due to a disturbance of the blood flow.

40-70% cognitive dysfunction
## Cognitive function

<table>
<thead>
<tr>
<th>Cognitive domain</th>
<th>Disorder/deficits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oriëntation</td>
<td>Self-awareness, oriëntation in time and space</td>
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<tr>
<td>Perception</td>
<td>Visual-spatial perception like neglect, visual-constructive skills</td>
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<tr>
<td>Attention</td>
<td>Attention capacity, concentration, processing information, speed</td>
</tr>
<tr>
<td>Memory</td>
<td>Short-term, long-term, visual, verbal, spatial</td>
</tr>
<tr>
<td>Executive function</td>
<td>Verbal reasoning, problem solving, planning, resistance to interference, multitasking, cognitive flexibility</td>
</tr>
<tr>
<td>Praxis</td>
<td>motor function (apraxia)</td>
</tr>
<tr>
<td>Communication</td>
<td>language comprehension and/or production (aphasia)</td>
</tr>
</tbody>
</table>
Cognitive rehabilitation

Cognitive rehabilitation focusses on restoring cognitive abilities that are damaged after brain injury.

Cognitive assessment

Cognitive intervention
How do we measure cognitive function?

Visuo-constructive perception
Visual Memory

Inhibition
Mental Speed

Language production

<table>
<thead>
<tr>
<th>RED</th>
<th>GREEN</th>
<th>BLUE</th>
<th>YELLOW</th>
<th>PINK</th>
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<tbody>
<tr>
<td>ORANGE</td>
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<tr>
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</table>
What does it say about everyday functioning?

- Dynamic
- Multitasking
- Complex

- Static paper- and pencil tests
- Quiet room
- One on one
Virtual Reality

A computer-generated 3D environment, that facilitates a natural way of interacting and immersing oneself in it.
VR-assessment

- Realistic
- Dynamic
- Control the level of difficulty
- Registration of behaviour
- More enjoyable
- Enhanced motivation

Zygouris et al., 2015, Parsons et al., 2008
The Virtual Supermarket
Pilotstudy
Virtual Shopping test
Pilot study

The aim of this study is to explore the feasibility of the headmounted display compared to a standard desktop display.

• 40 stroke patients
• 40 healthy controls

Headmounted Display VS. Desktop Display
Project 2

The aim of the study is to investigate the performance in the virtual supermarket and its relation to performance on established cognitive tests.

Is the Virtual Supermarket a valid tool to measure cognitive function?
Game Research: Seed Money Grant

- Implementation of navigation- and eye-tracking
- Avatars
- Sound
- Data management
Data Capturing
Thank you for your attention!
- VR Researchteam -

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