

GREEN ^{and} DIGITAL TRANSFORMATION

Digitale Biomarker für die Demenz(vorsorge): Innovation von der Forschung zur Anwendung

2



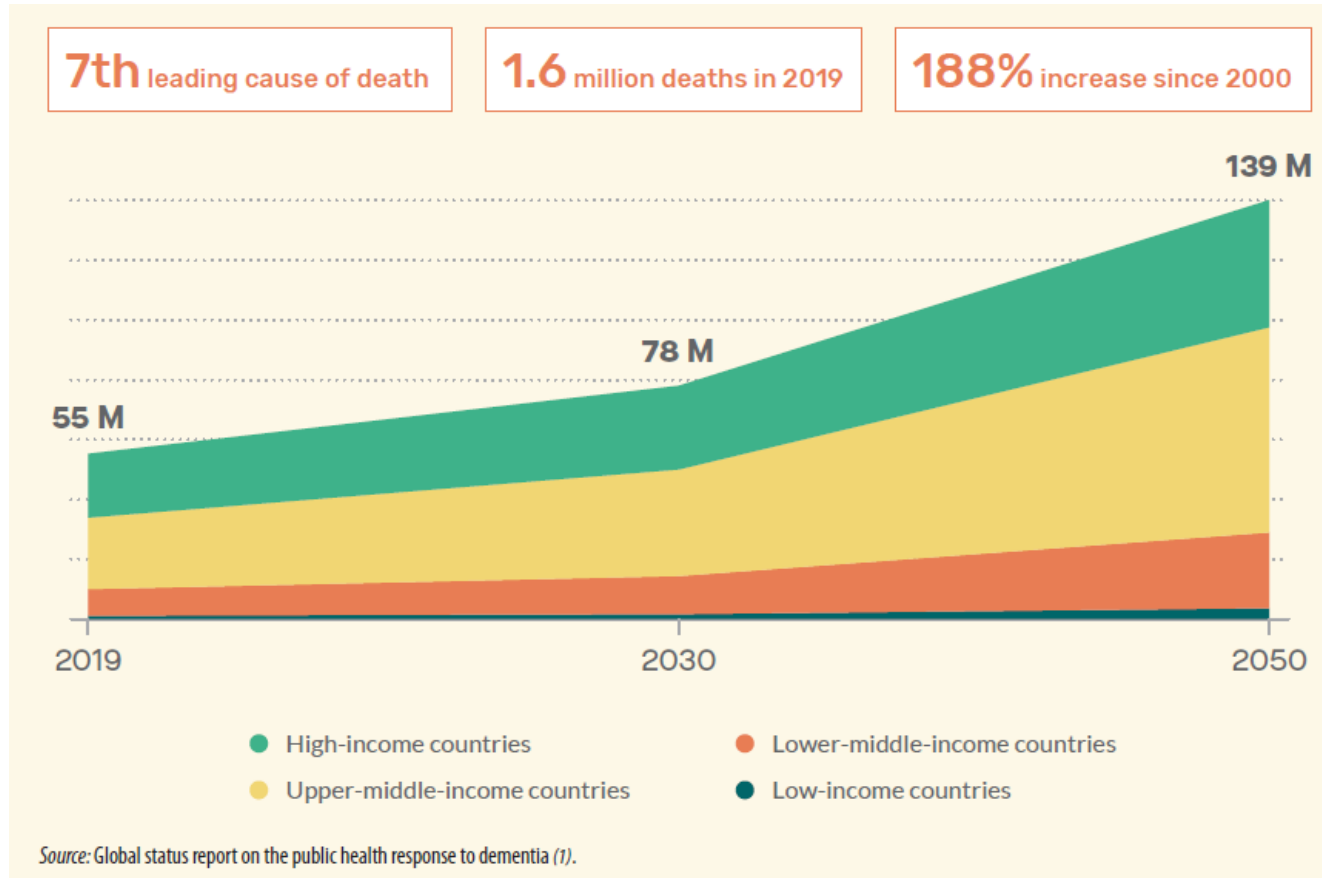
Lucas Paletta
Silvia Russegger
Sandra Draxler

Digital Health & Care
Institut für Digitale Technologien

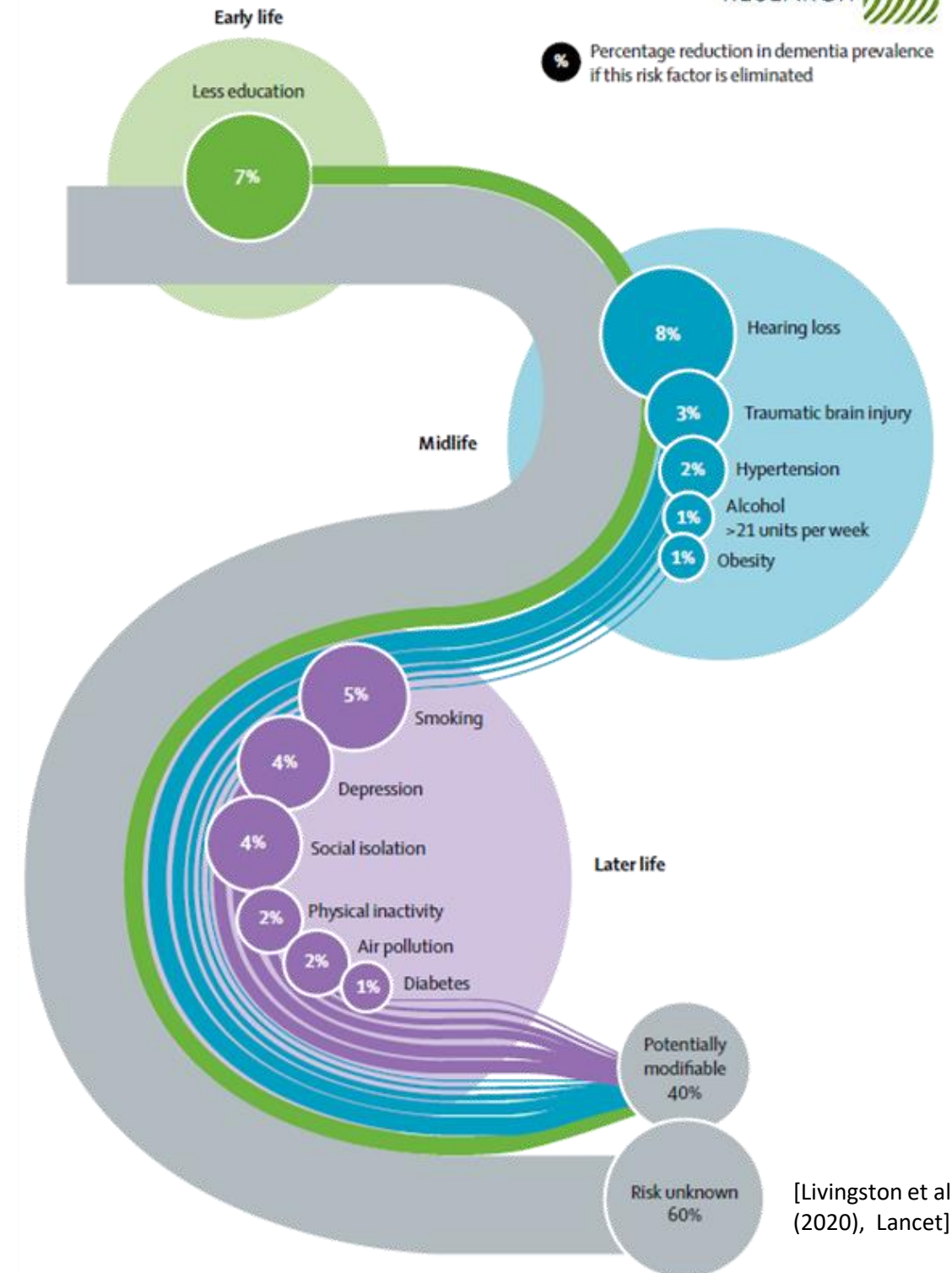
JOANNEUM RESEARCH Forschungsgesellschaft mbH

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Demenz: Intervention und Risikofaktoren



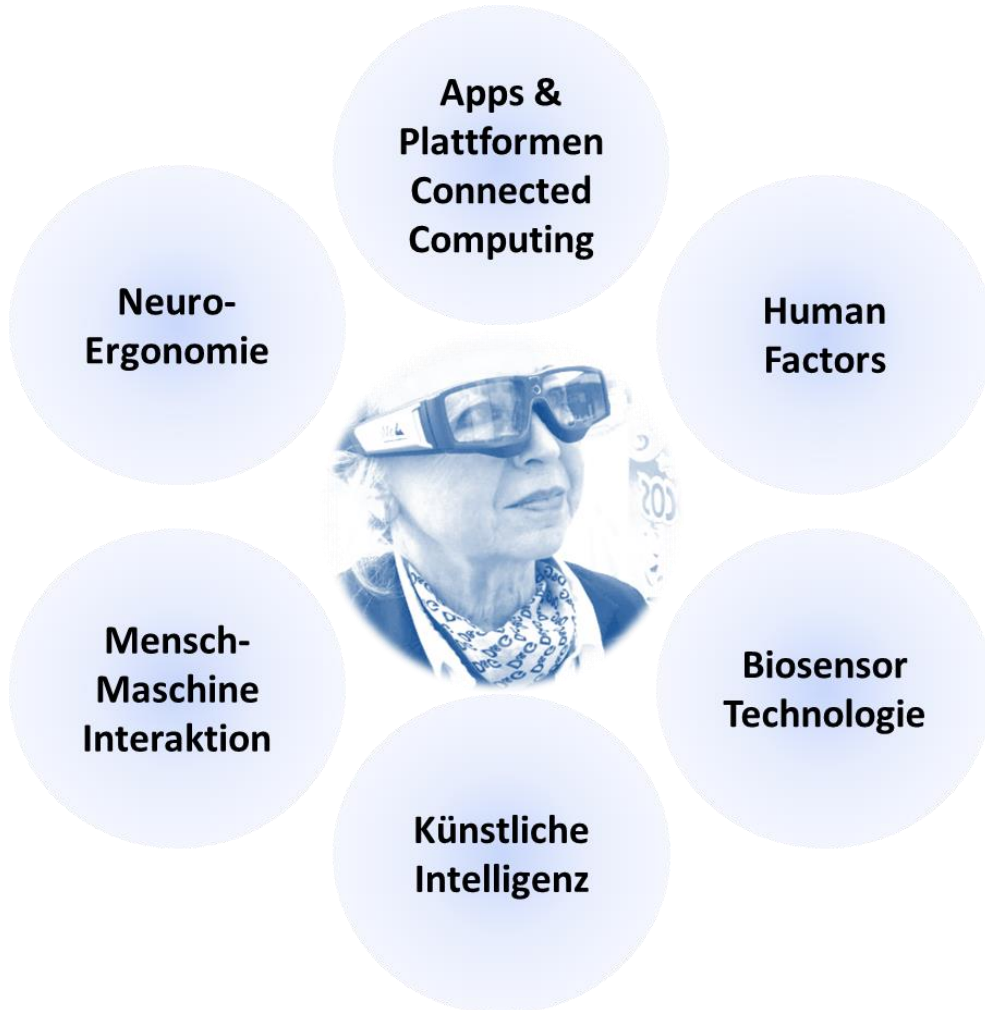
- Prävalenz in Österreich: 120.000 Personen (2014)
- Verdoppelung bis 2050



[Livingston et al. (2020), Lancet]

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Digital Health & Care



Assistenztechnologien
Training, Motivation, IT-Services

Kognitive Digitale Biomarker
Alzheimer, MCI, Long-COVID



Mentale Gesundheit
Resilienz, Depression

Neurodiversität
Gender / femtech
Autismus, ADHS



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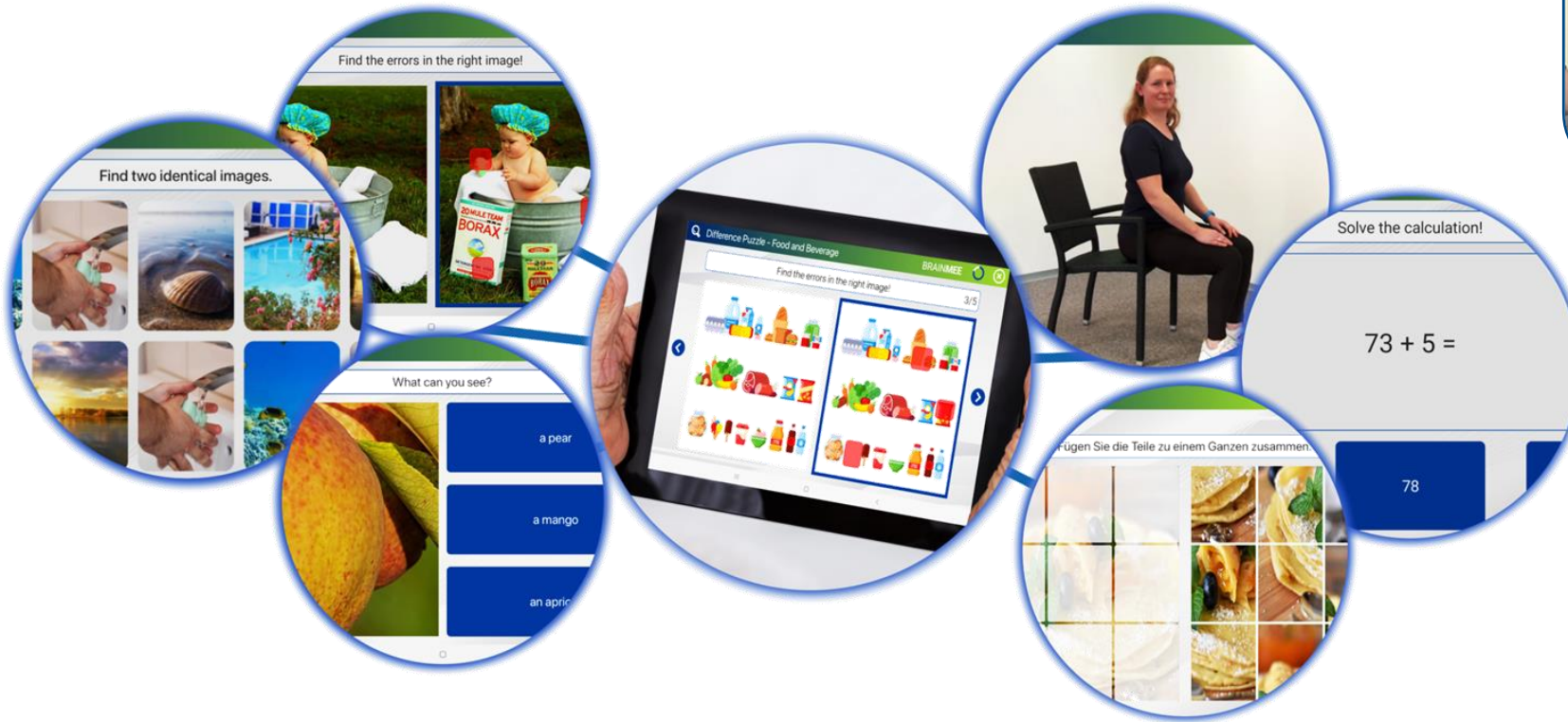
Human Factors Labor

www.joanneum.at/humanfactors

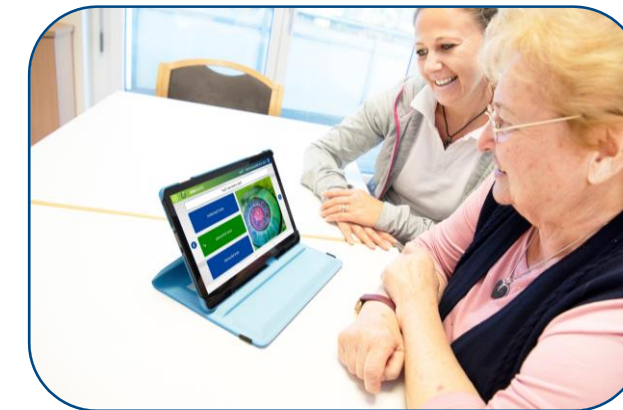


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Multimodale Aktivierung der Kognitiven Leistung



STATIONÄR: Einsatz in Einrichtungen und Praxen für Einzelpersonen und in Gruppensituationen.



MOBIL: Beaufsichtigtes Training mit Fachleuten oder geschulten Freiwilligen



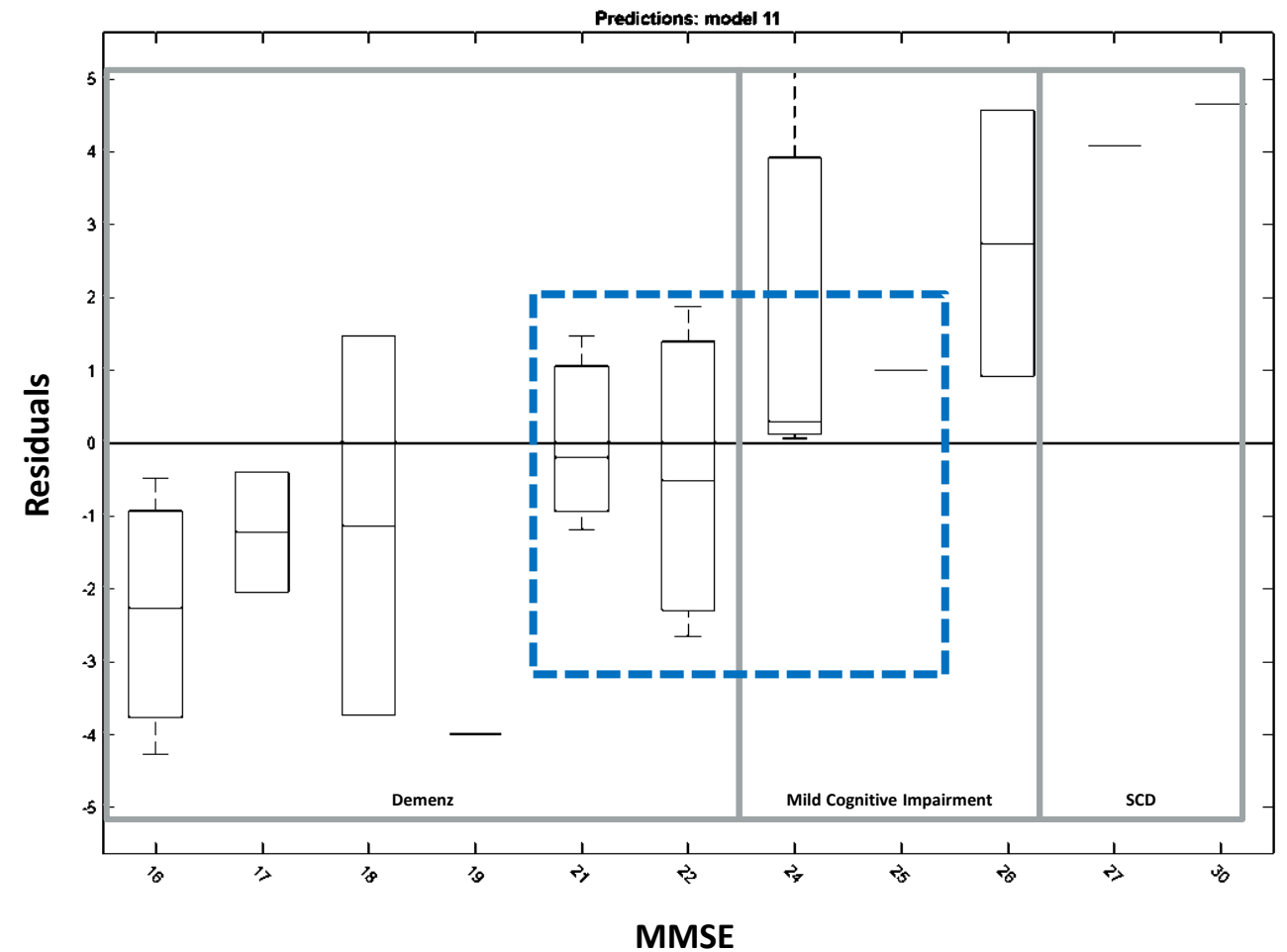
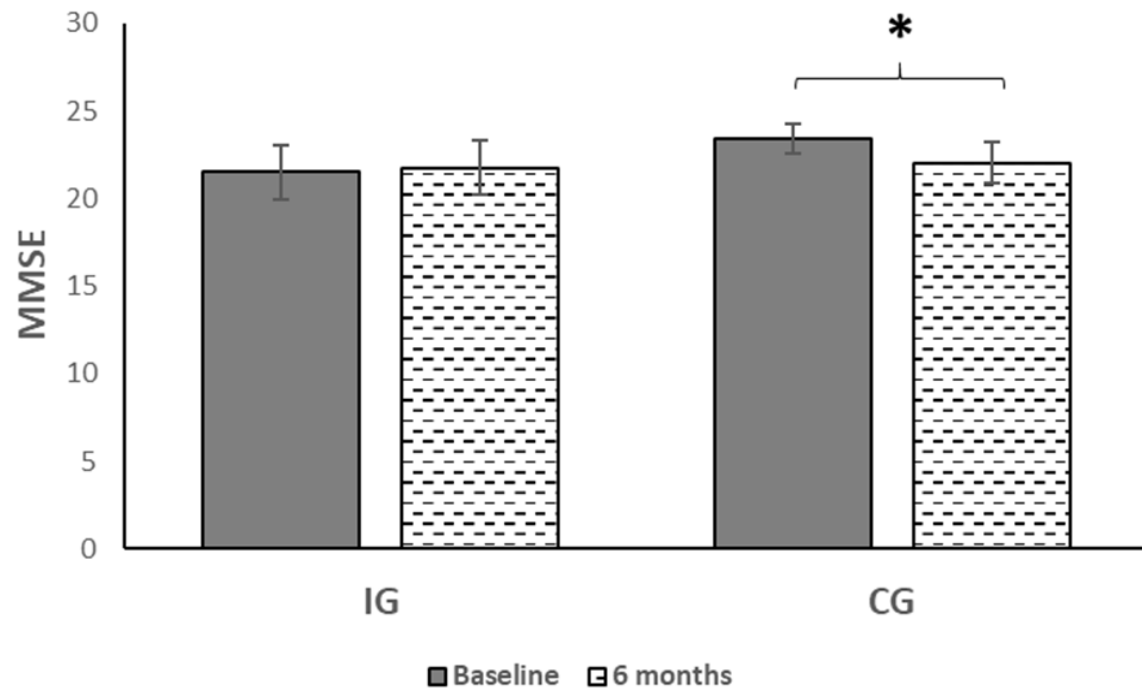
ZU HAUSE: Selbst aktiv bleiben. Allein oder mit Angehörigen

Adhärenz

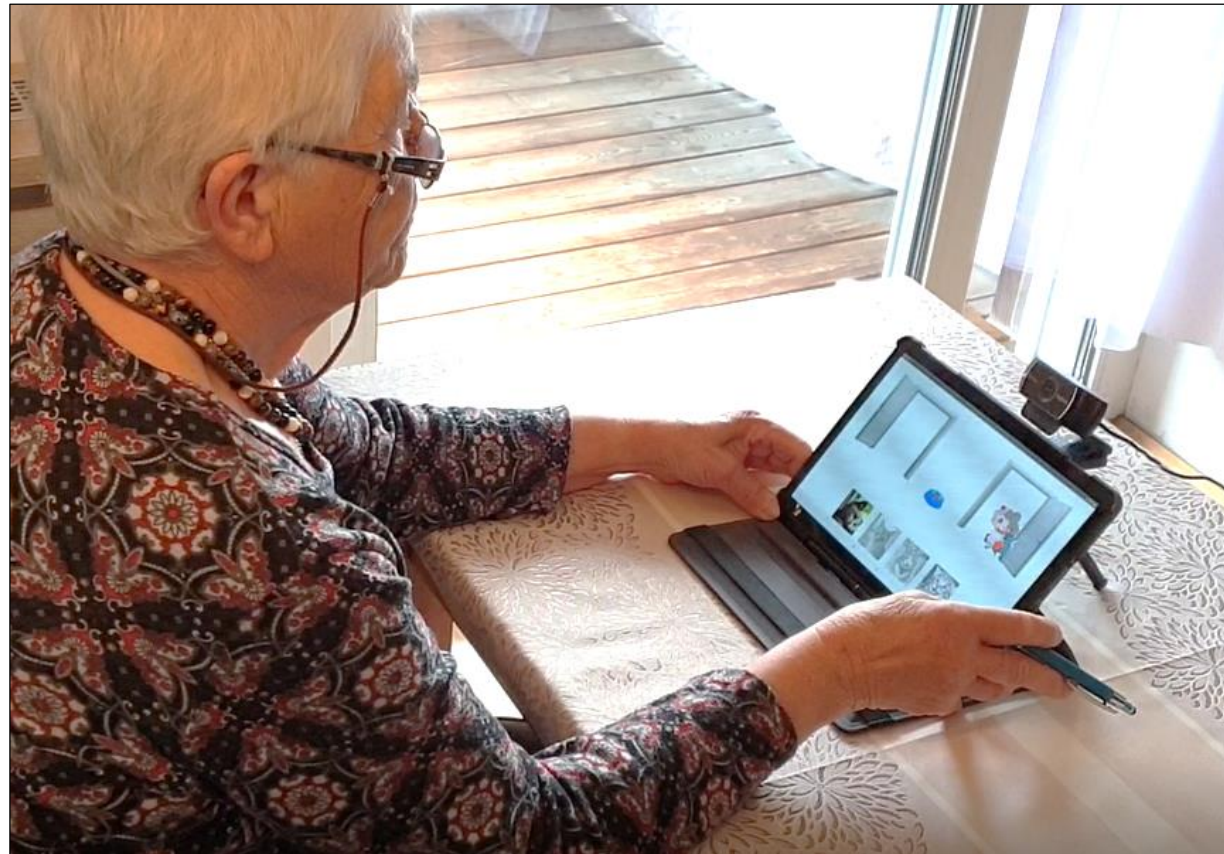
- **91.7%** gemäß Ngandu et al. (2022)
- **M=4.12** (SD=2.86) **Trainings pro Woche**
- **Dauer pro Training M=22.71** (SD=10.12) **Minuten** (min. 6.85)

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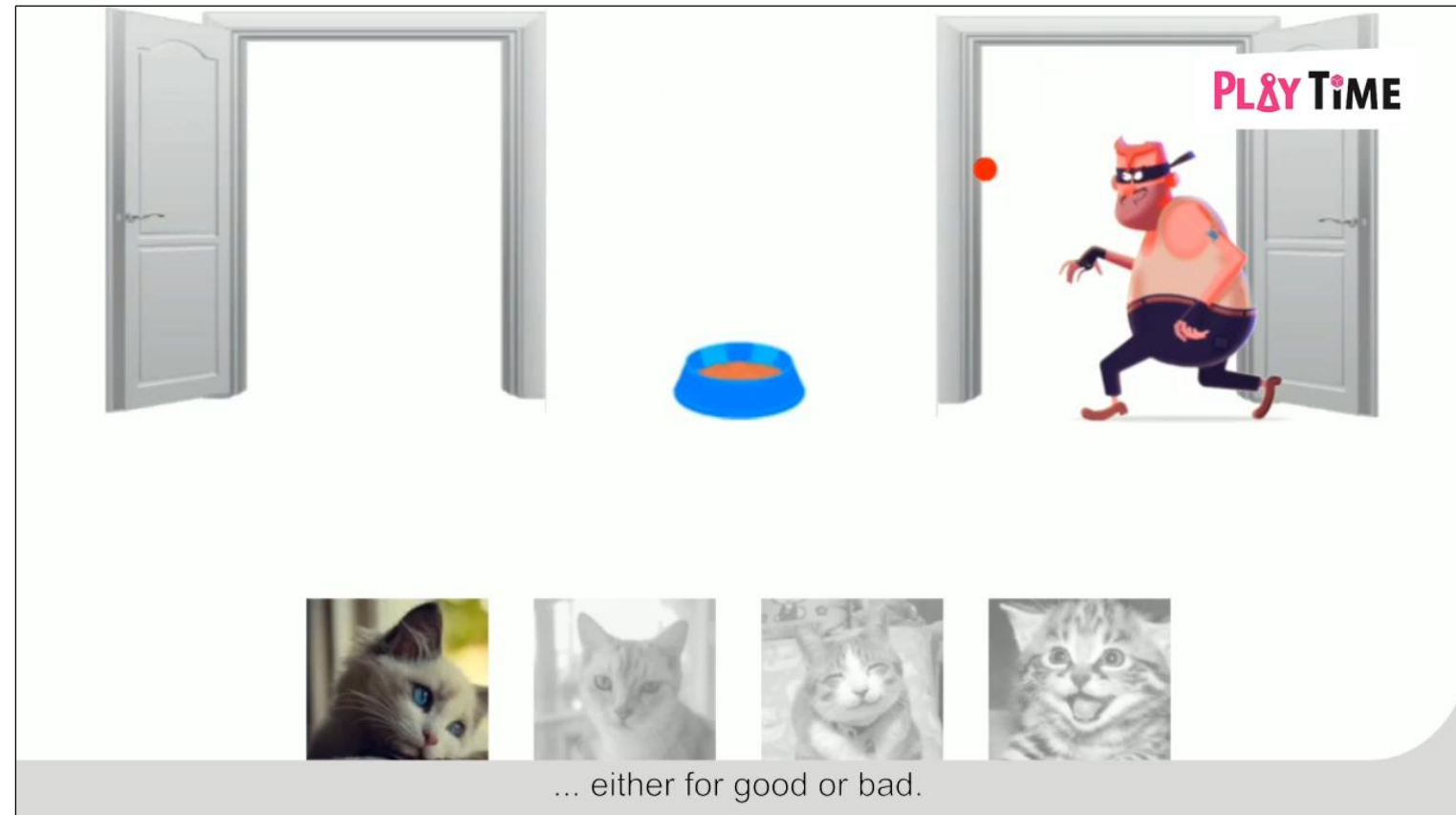
Digitale Biomarker für Kognitives Screening (MMST)



8 MIRA: Serious Game mit Blicksteuerung



Credit: JOANNEUM RESEARCH DIGITAL / M. Schneeberger



Soziale Roboter zur Motivation des Demenztrainings

9



Credit: JOANNEUM RESEARCH / Schwarzl

Paletta, L., Schüssler, S., Zuschnegg, J., Steiner, J., Pansy-Resch, S., Lammer, L., Prodromou, D., Brunsch, S., Lodron, G., Fellner, M. (2019), AMIGO - A Socially Assistive Robot for Coaching Multimodal Training of Persons with Dementia, in Korn, O., Ed., *Social Robots: Technological, Societal and Ethical Aspects of Human-Robot Interaction*, Springer, Human-Computer Interaction Series, DOI 10.1007/978-3-030-17107-0.

coach



companion

Aktivierung und Achtsamkeit: Training mit Virtueller Realität



Credit: JOANNEUM RESEARCH DIGITAL / M. Schneeberger



Credit: JOANNEUM RESEARCH DIGITAL / M. Schneeberger

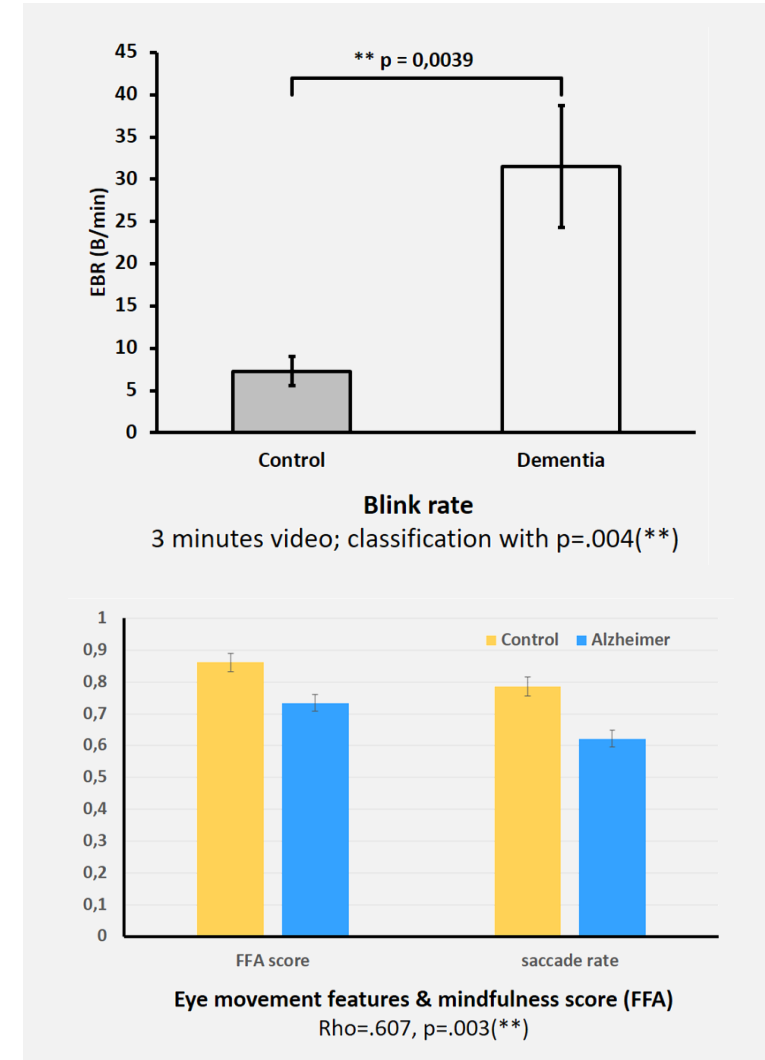
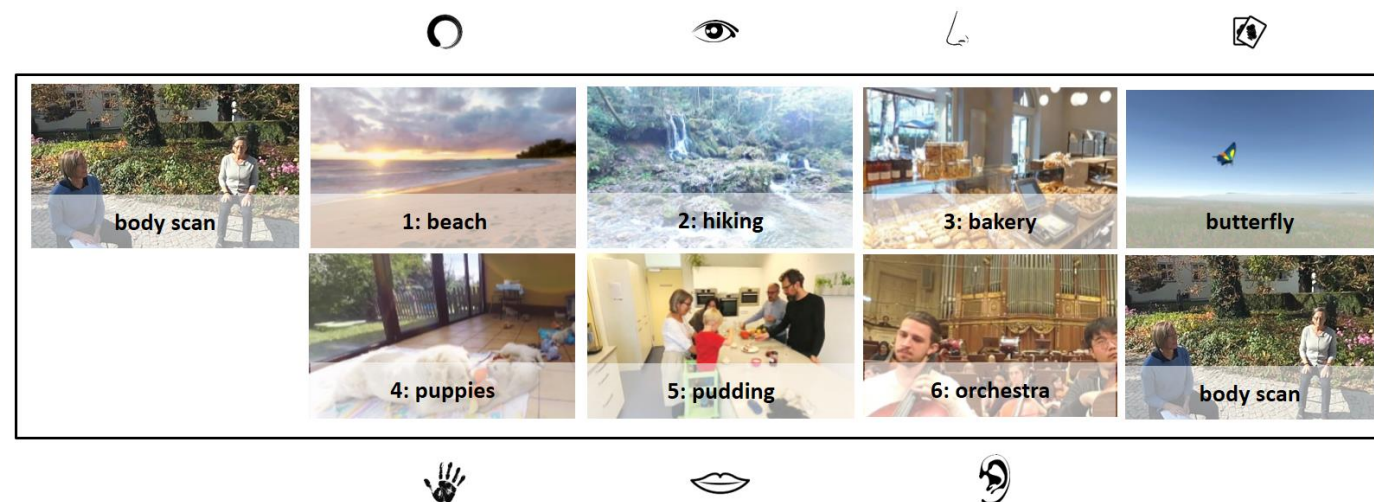


Credit: VitaBlick GmbH / A. Linzer



Digitale Biomarker für Demenz und Achtsamkeit

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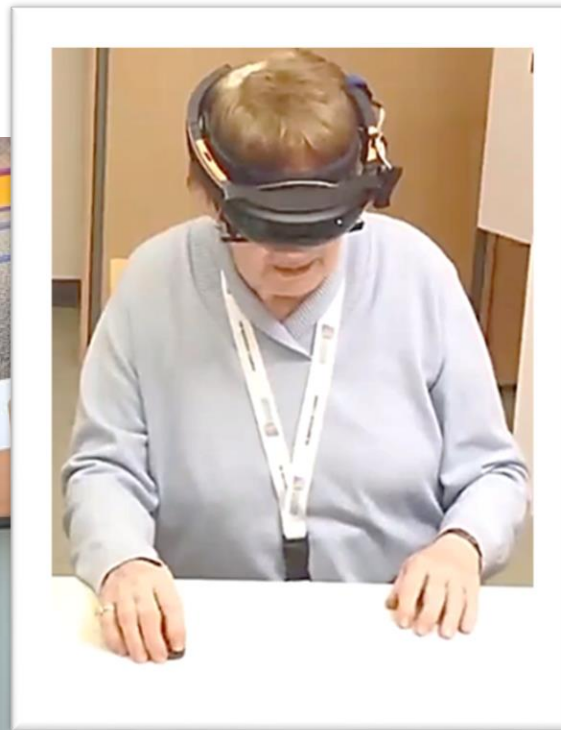


Paletta, L., Schüssler, S., Kober, S.E., Zweytik, E., Steiner, J., Andreu, J.-P., Fuhrmann, F., Pszeida, M., Dini, A., Grabher, A., Taberhofer, A., Staubmann, W., Draxler, T., Lampl, C., Mayr, M., Kölbl, G., Wood, G. **Virtual Reality based Mindfulness Training**, Sensory Activation and Mental Assessment in Dementia Care, *Alzheimer's & Dementia*, 2020, Volume 16, Issue S7, Supplement: Dementia Care and Psychosocial Factors, December 2020, e047344, <https://doi.org/10.1002/alz.047344>

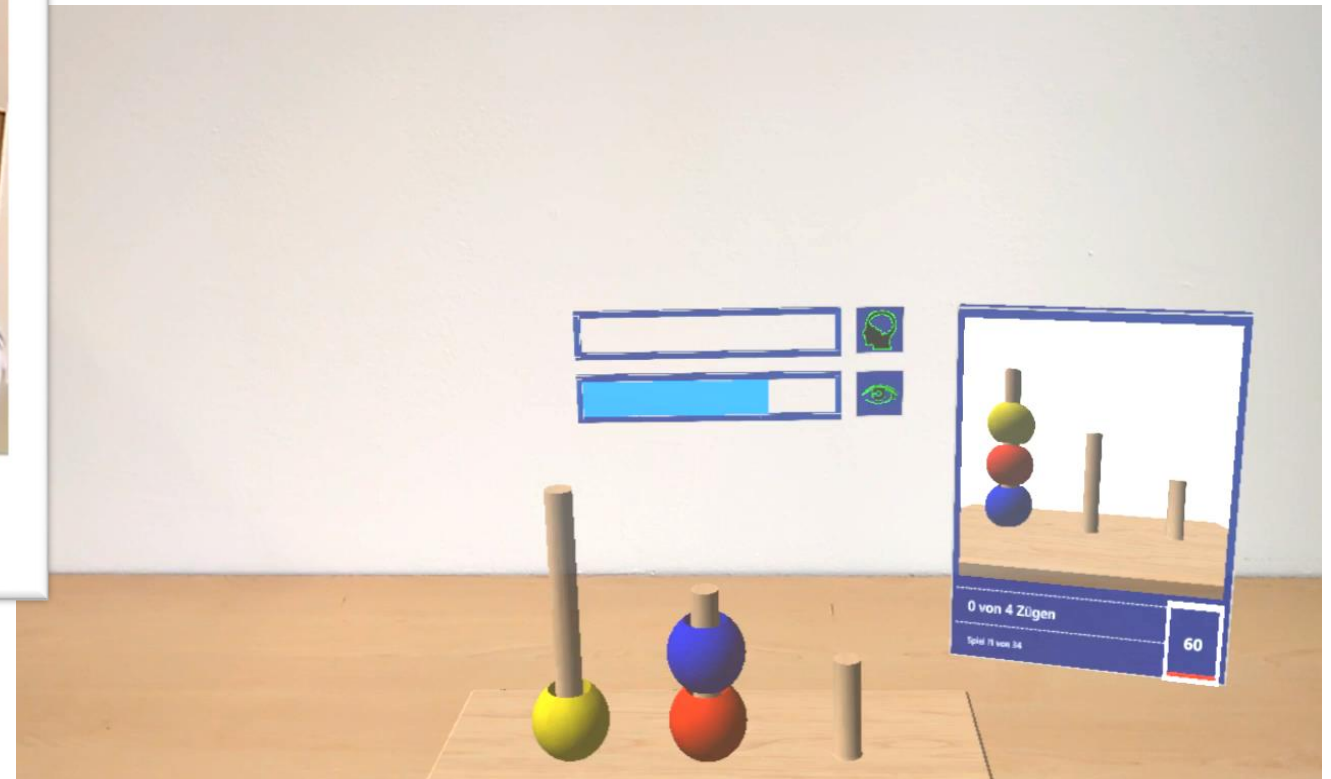
Kognitives Screening mit „Augmented Reality“



Credit: JOANNEUM RESEARCH / L. Paletta



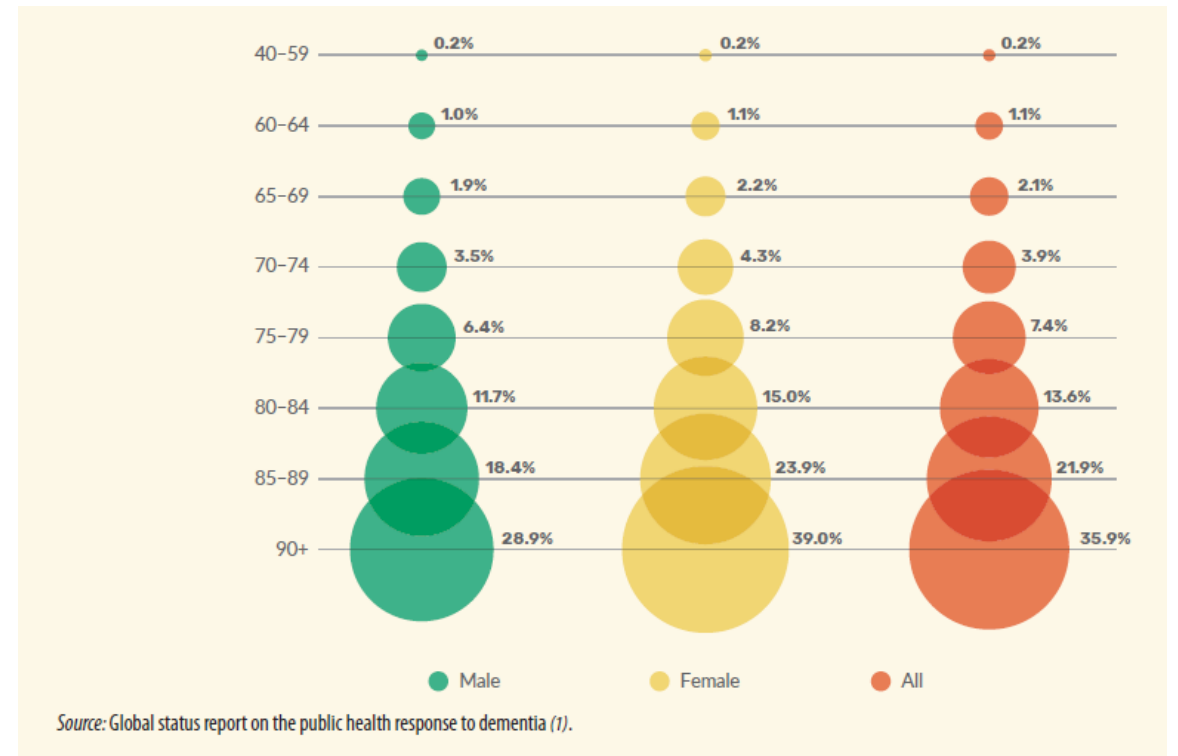
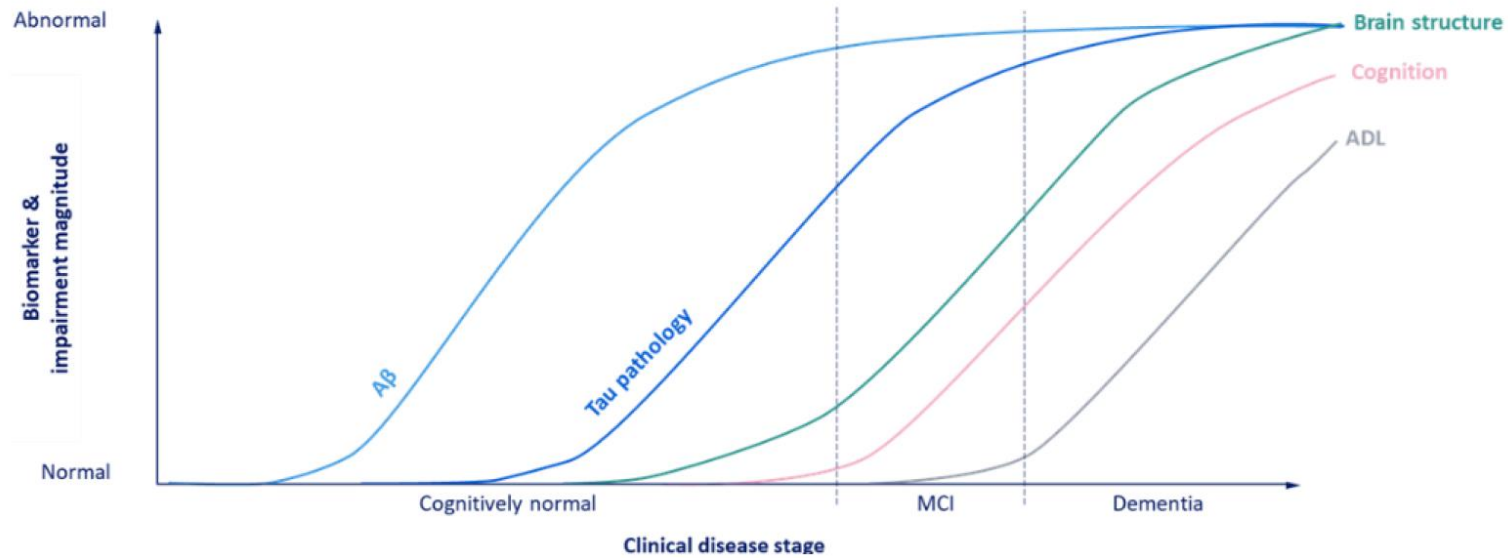
Credit: JOANNEUM RESEARCH / L. Paletta



Credit: JOANNEUM RESEARCH / A. Dini

Martin Pszeida, Amir Dini, Sandra Schüssler, Claudia Voithofer, Jean-Philippe Andreu, Philipp Hafner, Lucas Paletta (2021). Playful Screening of Executive Functions Using Augmented Reality and Gaze Based Assessment. In: Ayaz H., Asgher, U., Paletta, L. (eds.) *Advances in Neuroergonomics and Cognitive Engineering – Proceedings of the AHFE 2021 Conferences on Neuroergonomics and Cognitive Engineering, Industrial Cognitive Ergonomics and Engineering Psychology, and Cognitive Computing and Internet of Things*, July 25-29, 2021, New York, USA, Springer Nature, in print.

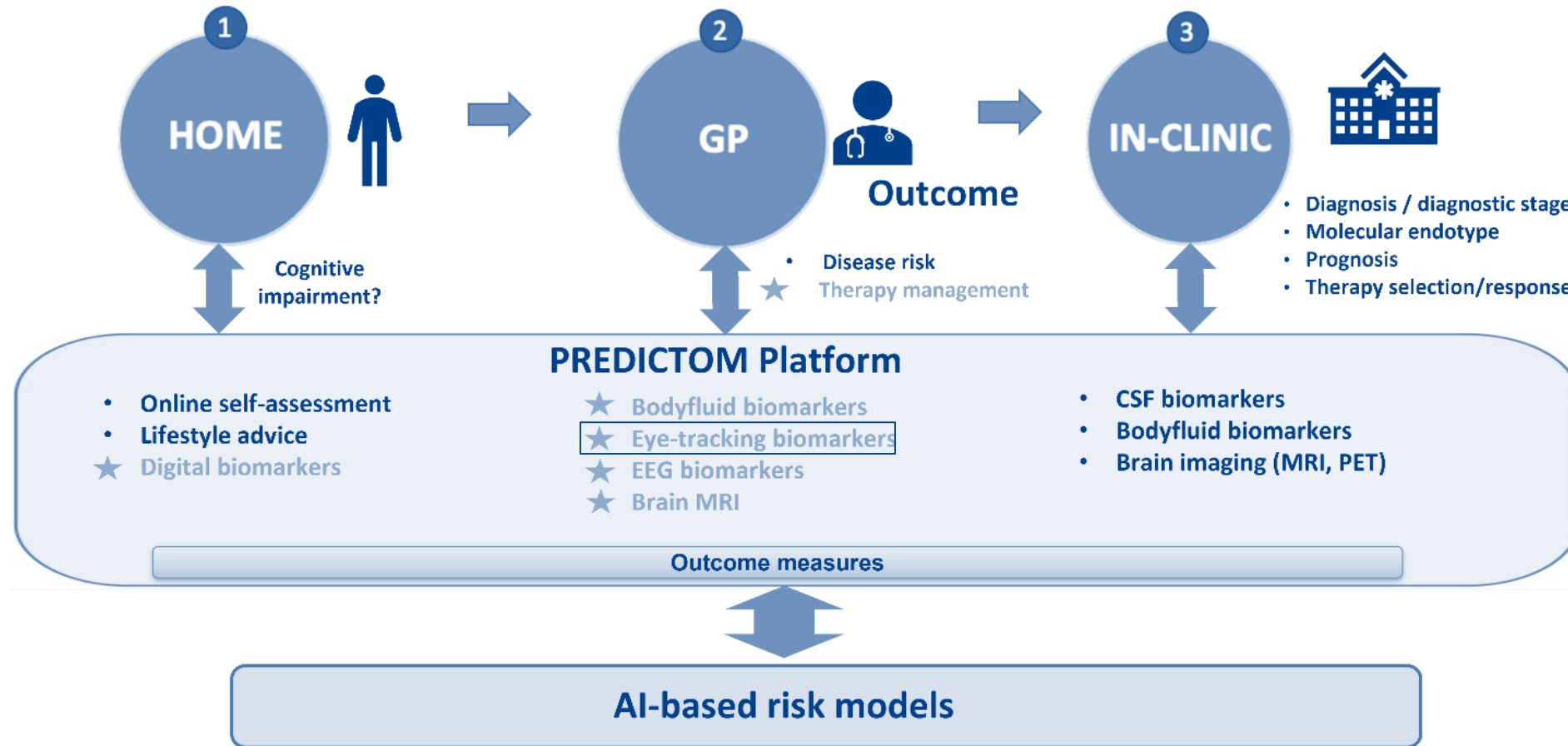
Früherkennung von Demenzrisiko



PREDICTOM - Prediction of Alzheimer's Disease Using an AI Driven Screening Platform (2023-2027)

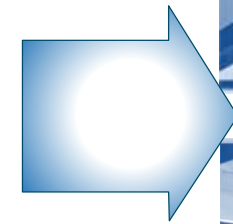
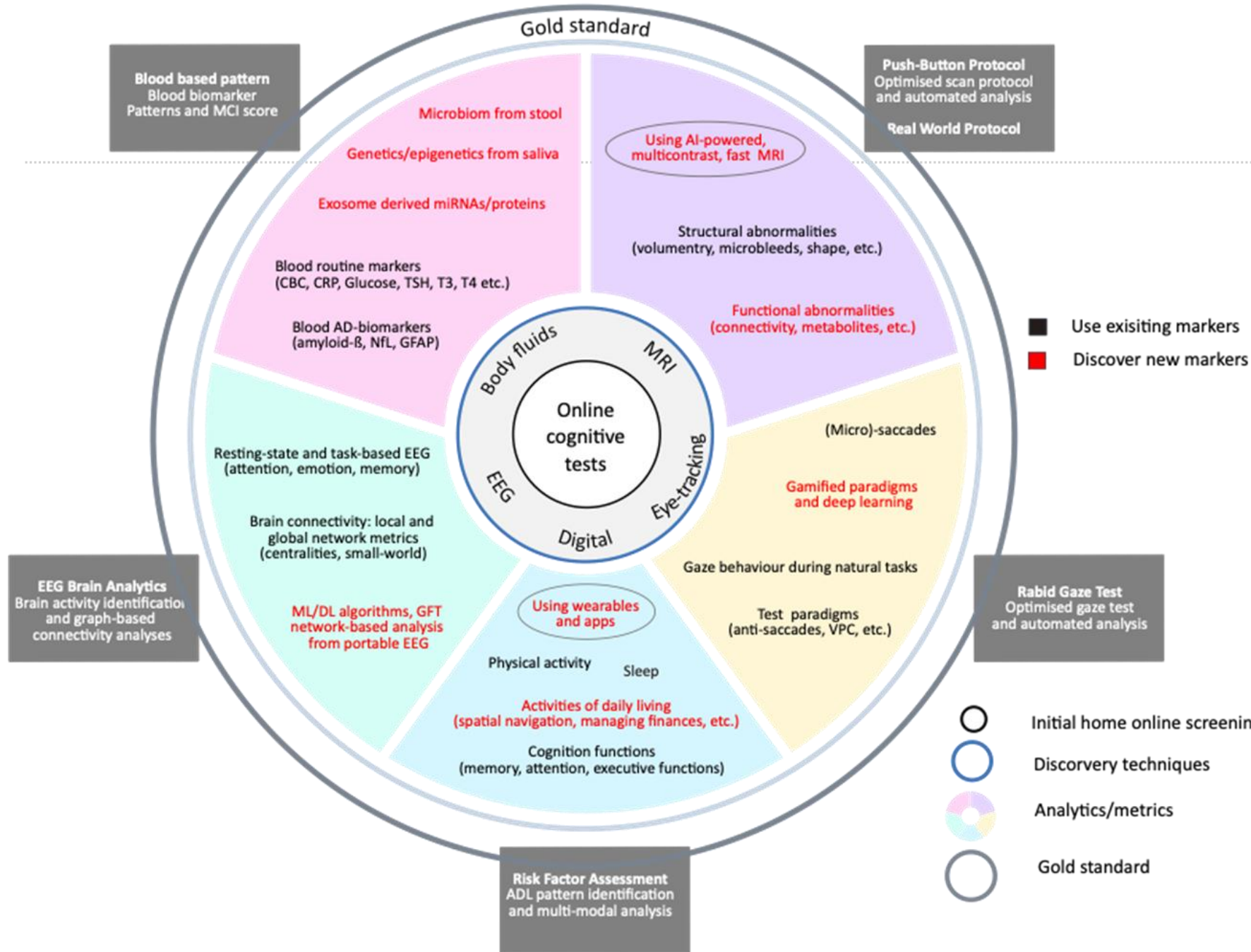
-  KING'S College LONDON
-  Fraunhofer
-  SIEMENS Healthineers
-  GE Healthcare
-  NICE
-  novo nordisk
-  JOANNEUM RESEARCH
-  CERTH
-  Alzheimer Europe
-  altoida
-  BrainCheck
- ...

★ NO CURRENT GENERAL PRACTICE



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Biomarker extraction/discovery



Credit: Permission by Tobii AB



Credit: JOANNEUM RESEARCH / L. Paletta

Danke für die Aufmerksamkeit!

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Klimaschutz, Umwelt,
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