



University
of Basel

Department of
Biomedical Engineering



BBS Hybrid Seminar

Digital Endpoints Development: Overcoming Methodological Challenges in Neuroscience

Date: Thursday, 27 August 2026

Time: 14:00–18:00 CET (3 h 40 min of talks + 20 min break)

Location: Virtual & in-person at Biozentrum Hörsaal U1.101 (Univ. of Basel)

Costs: Access to the seminar is free of charge, but registration is required:

[Link to Register: BBS Digital Endpoints Development Seminar](#)

Organizers: Tim Woelfle (RC2NB, DBE, University of Basel), Kostas Sechidis (Novartis), Nikolaos Sfikas (Novartis), Cristina Granziera (RC2NB, DBE, University of Basel)

Target audience: Statisticians, data scientists, clinicians and researchers with an interest in digital endpoints, biomarkers and remote sensing in clinical drug development

Abstract: Digital endpoints and biomarkers hold significant promise for revolutionizing healthcare by providing more precise and continuous monitoring of patient health, potentially transforming drug development and disease management. However, the development and implementation of these digital health technologies face numerous challenges, including the complexity of data processing, methodological challenges in modeling and interpreting the data, and navigating regulatory hurdles to ensure compliance and acceptance. By addressing these issues, we can unlock the full potential of digital endpoints in healthcare.

This workshop will discuss some of these challenges and offer a platform for exploring strategies to accelerate the validation and deployment of digital outcome measures. Additionally, various case studies on the use of remote sensing devices in neuroscience will be presented, focusing on applications in Huntington's disease, Parkinson's disease, and multiple sclerosis, showcasing the potential of these technologies in real-world settings.

Agenda:

Time	Speaker	Topic
14:00–14:10 <i>10 min</i>	Dominic Magirr (BBS board) & Organisers	Welcome remarks and setting the scene
Part 1 (100 min)		
14:10–14:35 <i>25 min</i>	Mia Tackney <i>MRC Biostatistics Unit, University of Cambridge</i>	Unleashing the full potential of digital outcome measures in clinical trials: eight questions that need attention
14:35–15:00 <i>25 min</i>	Jonas Dorn <i>Roche</i>	Developing a sensitive digital measure for disease progression – the challenging road to success for the Huntington's Disease Digital Motor Score
15:00–15:25 <i>25 min</i>	Bohdana Ratitch & Andrew Trigg <i>Bayer</i>	Clinical Validation of Novel Digital Measures: Statistical Methods for Reliability Evaluation
15:25–15:50 <i>25 min</i>	Dimitris Iakovakis <i>Koios Care</i>	Passive Patient Functioning Endpoints in Clinical Trials and Utilization in Care Settings: a Parkinson's Disease Case
Break – 15:50–16:10		
Part 2 (110 min)		
16:10–16:35 <i>25 min</i>	Tim Woelfle <i>USB, DBE (University of Basel), RC2NB</i>	Smartphone-Based Digital Biomarkers in Multiple Sclerosis and Their Learning and Practice Effects
16:35–17:00 <i>25 min</i>	Silvan Pless & Emmanuel Bartholomé <i>RC2NB, University of Basel & Indivi</i>	Development of Adaptive Smartphone-Based Games for Remote Cognitive Assessment in Multiple Sclerosis and Mild Cognitive Impairment
17:00–17:25 <i>25 min</i>	Alan Bourke <i>Novartis</i>	Digital Biomarker Deployment for Gait Analysis in Multiple Sclerosis
17:25–17:50 <i>25 min</i>	Andrea Wiencierz & Jannis Müller <i>USB, DBE (University of Basel), RC2NB</i>	Statistical and Practical Considerations of a Large Academic Multicenter Validation Study of Digital Biomarkers in Multiple Sclerosis
17:50–18:00 <i>10 min</i>	Cristina Granziera <i>USB, DBE (University of Basel), RC2NB</i>	Closing remarks

Relevant publications by the speakers:

- 1) **Mia S Tackney**, James R Carpenter, and Sofía S Villar. Unleashing the full potential of digital outcome measures in clinical trials: eight questions that need attention. *BMC medicine*, 22(1):413, 2024. <https://doi.org/10.1186/s12916-024-03590-x>
- 2) **Mia S Tackney**, Amber Steele, Joseph Newman, Marie-Christine Fritzsche, Federica Lucivero, Zarnie Khadjesari, Jennifer Lynch, Rosemary A Abbott, Vicki S Barber, James R Carpenter, et al. Digital endpoints in clinical trials: emerging themes from a multi-stakeholder knowledge exchange event. *Trials*, 25(1):521, 2024. <https://doi.org/10.1186/s13063-024-08356-7>
- 3) Louis-Solal Giboin, Cedric Simillion, Johannes Rennig, Atieh Bamdadian, Fiona C Kinsella, Anne V Smith, Peter McColgan, Michael Lindemann, Florian Lipsmeier, Edward J Wild, and **Jonas Dorn**. A digital motor score for sensitive detection of progression in huntington's disease. *Brain*, page awaf127, 04 2025. <https://doi.org/10.1093/brain/awaf127>
- 4) **Bohdana Ratitch**, **Andrew Trigg**, Madhurima Majumder, Vanja Vljajnic, Nicole Rethemeier, and Richard Nkulikiyinka. Clinical validation of novel digital measures: Statistical methods for reliability evaluation. *Digital Biomarkers*, 7(1):74–91, 2023. <https://doi.org/10.1159/000531054>
- 5) **Bohdana Ratitch**, Isaac R Rodriguez-Chavez, Abhishek Dabral, Adriano Fontanari, Julio Vega, Francesco Onorati, Benjamin Vandendriessche, Stuart Morton, and Yasaman Damestani. Considerations for analyzing and interpreting data from biometric monitoring technologies in clinical trials. *Digital Biomarkers*, 6(3):83–97, 2022. <https://doi.org/10.1159/000525897>
- 6) **Dimitrios Iakovakis**, Stelios Hadjidimitriou, Vasileios Charisis, Sevasti Bostantzopoulou, Zoe Katsarou, and Leontios J Hadjileontiadis. Touchscreen typing-pattern analysis for detecting fine motor skills decline in early-stage parkinson's disease. *Scientific reports*, 8(1):1–13, 2018. <https://doi.org/10.1038/s41598-018-25999-0>
- 7) **Tim Woelfle**, **Silvan Pless**, **Andrea Wiencierz**, Ludwig Kappos, Yvonne Naegelin, and Johannes Lorscheider. Practice effects of mobile tests of cognition, dexterity, and mobility on patients with multiple sclerosis: data analysis of a smartphone-based observational study. *Journal of Medical Internet Research*, 23(11):e30394, 2021. <https://doi.org/10.2196/30394>
- 8) **Silvan Pless**, **Tim Woelfle**, Johannes Lorscheider, Andrea Wiencierz, Óscar Reyes, Carlos Luque, Pasquale Calabrese, Cristina Granziera, and Ludwig Kappos. CoGames: Development of an adaptive smartphone-based and gamified monitoring tool for cognitive function in multiple sclerosis. *Journal of Neurology*, 272(2):119, 2025. <https://doi.org/10.1007/s00415-024-12818-y>
- 9) **Alan K Bourke**, Alf Scotland, Florian Lipsmeier, Christian Gossens, and Michael Lindemann. Gait characteristics harvested during a smartphone-based self-administered 2-minute walk test in people with multiple sclerosis: test-retest reliability and minimum detectable change. *Sensors*, 20(20):5906, 2020. <https://doi.org/10.3390/s20205906>

