

***Talk on Tuesday, 18. March 2025***

***Start: 10:15 Uhr till 11.30 Uhr***

***in HS 424***

***The talk will be presented in English***

# **Physical activity and mental health: Towards expedient (digital) prevention and intervention**

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Physical activity may serve as cost-effective prevention and treatment strategy with limited side effects for counteracting the increasing prevalence of mental disorders. Physical activity enhances psychological well-being in the general population, decreases the incidence of several mental disorders and improves treatment outcomes, especially in affective disorders, if added to pharmacotherapy and psychotherapy. However, in-depth research of the underlying psychological and neurobiological mechanisms is warranted to enable the application of physical activity to live up to its potential.

For example, researchers and clinicians are still treating physical activity as an unspecific prevention and intervention option, although PA offers a vast wealth of possibilities for targeted interventions to specifically improve symptomatology. Critically, these interventions need to be informed by insights into the complex dynamic interaction of biology, behavior, thoughts and emotions with human (ill) health in everyday life. To study these interactions with high ecological validity, we use mental m(obile)Health approaches such as electronic diaries, custom-developed mobile sensor technology (e.g., accelerometers, ECG-sensors) and intelligent real-time feedback systems (e.g., geolocation-triggered e-diaries). We analyze the intensive longitudinal data via multilevel modeling and geoinformatics. Beyond this, we link the ambulatory studies with laboratory experiments on biological signatures (e.g., functional brain imaging and epigenetics).

I will exemplify the strengths and limitations of this approach by presenting findings insights we gained into behavioral and neurobiological mechanisms of physical activity as a promising resilience candidate for mental health promotion and maintenance. In particular, this work is focused on affective disorders, drug intake, social isolation, and environmental influences onto mental health. Finally, I will discuss prominent challenges which need to be resolved to pave the way for mechanism-translation towards expedient, evidence-based, and individually-tailored health promotion, which includes but is not limited to digital solutions.