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**Topic: Validation of Consumer-grade Wearables for (clinical) Study Use**

Wearables allow the easy recording of various values for fitness and sports use. However, they may also be used in explorative (clinical) studies to generate additional data. While some more expensive devices from well-known manufacturers are certified as medical equipment and therefore underwent respective studies, other more economic devices, potentially with additional recording capabilities, may not have received these certifications.

Nonetheless, these devices could still be used to generate additional data in an economic way. This project/thesis therefore aims to analyze and validate specific devices regarding their data recording capabilities and accuracy, in order to ensure that potential results are usable for various types of studies.

This thesis is part of the SMART Start project and will be conducted together with the Frauenklinik (women's hospital) of Universitätsklinikum (university hospital) Erlangen and other collaborators.

The proposed work consists of the following parts:

- Identification of existing work
- Creation of a study protocol
- Study conduction and data aggregation
- Validation

The thesis must contain a detailed description of all developed and used algorithms as well as a profound result evaluation and discussion. The implemented code has to be documented and provided. An extended research on literature, existing patents and related work in the corresponding areas has to be performed.

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**Student:** tbd

**Start – End:** tbd