



**Figure 1.** Methodological workflow of the analysis approach from the various data sources in the field to the research questions and prediction models. The arrow on the left indicates a chronology of the different steps in the approach. The 3D-environmental-model under *Data Integration* shows alternative traverse paths (a, b, c) to a specific point of interest (POI). The model is derived from aerial drone imaging and rover's LiDAR imaging for high surface resolution. *Analysis & Prediction* shows preliminary results of the proof-of-concept study. The graphs show the individual pre- and post-data of an analog astronaut over an averaged gait cycle. The red-shaded area marks the fatigue-induced alterations in the gait parameters.