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Gait of CKD Patients

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Background Digital therapeutics are positioned as treatments for disease and disability. In chronic kidney disease (CKD), gait has the potential to be an important biomarker for determining patients' health status and the effectiveness of interventions. Gait speed is reduced in CKD, but information on other gait parameters is limited. This study investigated the gait characteristics of CKD to generate baseline data for the development of digital therapeutics. Method We performed bioimpedance analysis measurements, the timed-up-and-go, Tinetti, and grip strength tests, and gait analysis in 217 healthy individuals and 276 patients with CKD. Demographic and clinical information was collected, including underlying diseases and medications, laboratory tests, and quality of life satisfaction surveys. Gait analysis was performed using skeleton data, which involved acquiring three-dimensional skeleton data of a walker using a single Kinect sensor. The performance of an AI-based classification model to distinguish between healthy individuals and those with CKD was then investigated. Simultaneously, inertia measurement unit analysis was conducted using measurements taken from the wrist and waist. Result Additionally, most subjects received a health intervention via an app, and their gait was assessed for improvements after an 8-week period. Incidents such as falls, fractures, hospitalizations, and deaths will be investigated in years 1 and 3. Discussion and Conclusion This study confirmed that the gaits of healthy individuals and CKD patients were different, and the effect of the 8-week app-based health intervention will be analyzed. The study will yield important baseline data for creating digital therapeutics for CKD patients' diet/exercise.

Keywords: Gait, CKD, AI, digital therapeutics