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# Sarcopenia and its Impact on Gait Patterns: Report from Gait Analysis using Artificial Intelligence for digital Therapeutics of patients with Chronic Kidney Disease (GAIT-CKD)

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**Objectives :** Sarcopenia results in a decline in exercise capacity and deterioration of walking parameters. Our investigation focused on determining the prevalence of sarcopenia and analyzing the gait patterns in both healthy individuals and those with Chronic Kidney Disease (CKD).
**Methods :** We conducted gait analysis on 387 subjects and 106 subjects with sarcopenia. Measurements included bioimpedance analysis, the timed-up-and-go test, Tinetti test, grip strength tests, and gait analysis, categorized based on defined criteria for sarcopenia, considering appendicular skeletal muscle index, hand grip test, and walking performance. We included probable sarcopenia in our analysis.
**Results :** Sarcopenia was observed in 16.6% of healthy subjects and 37.3% of CKD patients. Sarcopenic individuals were characterized by advanced age, lower BMI (25.15 vs. 21.51), and a higher proportion of females. They exhibited inferior performance on the Tinetti test (26.390 vs. 24.010). Bioimpedance analysis indicated lower levels of body fat (20.018 vs. 16.465) and reduced muscle mass in the abdomen, legs, and arms. Phase angle was also diminished. Gait analysis revealed decreased walking speed, reduced stride length, and a decrease in balanced stride in individuals with sarcopenia. Regarding spinal movements, there was an increase in the angles of anterior-posterior and lateral motion. Unfavorable hip movement was also noted. However, there were minimal differences in swing time or knee/foot movements between the two groups.
**Conclusions :** Sarcopenia was found to be prevalent even in non-hospitalized patients, emphasizing the significance of monitoring velocity and stride in walking. Additionally, the observation of hip and spinal movements emerged as crucial factors in analyzing and following up on the gait patterns of sarcopenic patients.