Gait Analysis Using Machine Learning to Predicting Functional Independence

Parkinson's disease is a neurodegenerative disease that occurs most frequently in the elderly, and the number of patients is increasing year by year. Gait disorder is a major factor in the decline of independence in daily living of patients with Parkinson's disease, and gait disorder is a major target for rehabilitation. However, it is unclear what specific gait parameters affect the improvement of patients' independence in daily living. In order to plan effective rehabilitation for patients with Parkinson's disease, it is instrumental to capture the detailed changes in gait and quantitatively analyze how these changes affect the patients' ability to live independently. In this study, we have been investigating what kinds of gait parameters change affect the level of independence in daily living by regularly measuring the gait of patients with Parkinson's disease. We showed that the degree of independence in daily living can be predicted from gait parameters using machine learning methods. In the future, based on the model used for prediction, we aim to clarify the specific gait parameters that contribute to the improvement of independence in daily living. [1].

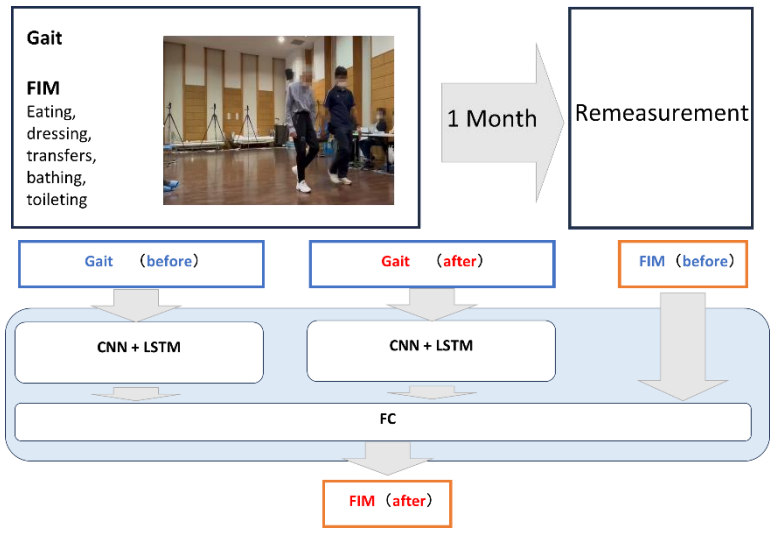

Fig 1 Measurement Procedures and Prediction Models

Keywords: Parkinson's disease, Gait, Independence in daily living, rehabilitation, machine learning

References:

[1] M. Ishikawa T. Hasegawa, K. Kaminishi, R. Chiba, J. Ota and A. Yozu, "Analysis of gait factors relevant to daily living in patients with Parkinson's disease, *2024 46th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Orlando, FL, USA, 2024.