

Exploring the impact of meta learning on post-stroke motor recovery

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The variability in recovery performance among individuals who have suffered a stroke has puzzled clinicians. A research group from University of Tsukuba has discovered that meta-learning ability

enhances motor skill recovery in these patients.

The researchers evaluated the meta-learning ability of individuals with hemiplegic stroke in the rehabilitation ward of Fujita Health University Hospital using a novel meta-learning experiment for motor adaptation. They found that variabilities in the patients' improvements in daily living activity measures were explained by the measured meta-learning ability.

The results are [published](#) in the *European Journal of Physical and Rehabilitation Medicine*.

Meta-learning, categorized as metacognitive ability, is a crucial skill for recognizing one's own learning abilities and planning practice. It has been a central issue in [educational psychology](#) regarding improving the classroom performance of younger people in subjects such as calculus or language. The researchers found that such meta-learning ability is also important for adolescents, especially for the recovery of motor skill performance after a stroke.

They developed a simple motor meta-learning task using a robotic device, which could be completed in half an hour. The [stroke patients](#) in the rehabilitation ward of Fujita Health University Hospital participated in this study, and their motor meta-learning ability was assessed. This information was analyzed alongside Functional Independence Measure scores taken during hospitalization.

Statistical analysis revealed a significant correlation between meta-learning ability and improvement index. Thus, meta-learning ability was identified as a predictor of the effect of rehabilitation training.

This discovery suggests that enhancement of individual meta-learning ability might improve rehabilitation efficacy. This could be a crucial factor in developing customized [rehabilitation programs](#) focused on

improving an individual's [learning ability](#) as a basis for motor recovery through rehabilitation training.

More information: Taisei Sugiyama et al, Learning-to-learn as a metacognitive correlate of functional outcomes after stroke: a cohort study, *European Journal of Physical and Rehabilitation Medicine* (2024). [DOI: 10.23736/S1973-9087.24.08446-6](https://doi.org/10.23736/S1973-9087.24.08446-6)

Provided by University of Tsukuba

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