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A New Rehabilitation Method for Stroke Patients: A Comparative Study between the Pasta Matrix Reaching Task and the Novel Reaching Task

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A NEW REHABILITATION METHOD FOR STROKE REHABILITATION: A COMPARATIVE STUDY BETWEEN THE PASTA MATRIX REACHING TASK AND THE NOVEL REACHING TASK

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Stroke is a leading cause of disability worldwide. To promote better outcome for stroke survivors, scientists use animal models to understand basic mechanisms of stroke, rehabilitation, and recovery. Rodent models have revealed that skilled reach training (e.g., coordinated use of digits and limbs) promotes improved functional outcome following stroke. The single-pellet task (SPT) is widely used in rats; however, it can be an insensitive measure in other species, such as mice. The pasta matrix task (PMT) has been effectively implemented in mice; however, the task is limited by its required strength component. This study introduces a novel-reaching task aimed at overcoming the limitations of established tasks. Mice were trained on the PMT, SPT, or the novel task to establish the skill and determine the efficacy of each task. The novel task proved to be difficult for the mice, with performance levels reaching an overall average of 18.5%. After 20 days of training, performance did not reach an asymptotic level. Performance on the PMT and SPT resembled established levels of successful acquisition. Multiple modifications of the novel-reaching task apparatus were explored. Though a poor assessment tool, we believe the novel-reaching task may be particularly useful as a rehabilitative strategy due to the complexity of reach it promotes, which should stimulate high levels of neural plasticity. Findings from this study highlight the importance of drawing comparisons across reaching tasks and caution comparing different task results to one other. A follow-up study is underway whereby each task is compared for its rehabilitative benefits.