Researchers use video game-like test to study learning and recovery in stroke patients

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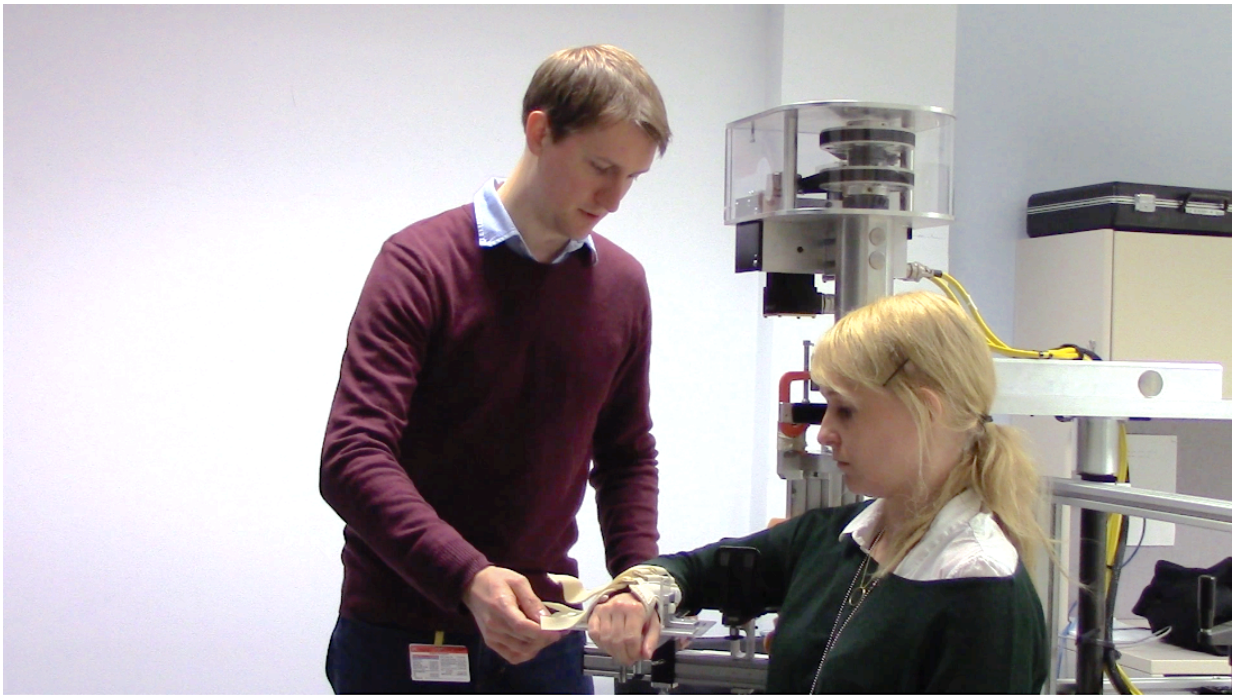

Researcher secures participant into robotic arm. Credit: Johns Hopkins Media

A robotic arm and a virtual game were essential tools in a new study from researchers at Johns Hopkins Medicine. The study results suggest that while training doesn't change neurological repair in chronic stroke patients, it can indeed help such patients learn new motor skills and achieve more independence in their daily lives.

A report on the work is published in the journal *Neurorehabilitation and Neural Repair* on Oct. 27.

"What we found is that physical rehab is not going to change the weakness caused by damaged brain cells in chronic patients, but it is going to change how well they can perform certain tasks, which can have a huge impact on a patient's daily life," says Pablo Celnik, M.D., director of the Department of Physical Medicine and Rehabilitation at Johns Hopkins.

Brain damage from strokes occurs when the blood supply to the brain is blocked (ischemic stroke) or a blood vessel feeding brain tissue ruptures (hemorrhagic stroke). Depending on the extent of the stroke, the damage can cause partial or total paralysis, affecting motor function, balance, speech, sensation and other physical activities. Chronic stroke patients are those whose physical impairments persist more than six months after the stroke. Rehabilitation specialists measure the damage using the Fugl-Meyer Assessment (FMA), which measures the neurological damage wrought by a stroke on a scale from zero to 66.

For the new study, the investigators recruited 10 chronic stroke patients with FMA scores of ?50 out of 66 and categorized them as having "mild to moderate" functional deficits for the purposes of the study, and 10 other patients with FMA scores of