

## Robot teaches stroke survivors

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The arm is being used by a patient. Credit: Vergaro et al., *Journal of NeuroEngineering and Rehabilitation*

Shaking hands with a robotic arm could be a new way to help stroke patients learn to use their arms again. Researchers writing in BioMed Central's open access *Journal of NeuroEngineering and Rehabilitation* report a pilot trial of the 'Braccio di Ferro' (Iron arm) robot in 10 patients.

Elena Vergaro, from the University of Genoa, Italy, worked with a team of researchers from the Italian Institute of Technology, Genoa, to develop the robotic aid. She said, "Our preliminary results from this small group of patients suggest that the scheme is robust and promotes a statistically significant improvement in performance. Future large-scale

controlled clinical trials should confirm that robot-assisted physiotherapy can allow functional achievements in activities of daily life".

The researcher's [robot](#) assists patients as they attempt to guide its 'hand' in a figure-of-eight motion above a desk, pulling in the correct direction and resisting incorrect movements to a minutely controlled degree. This interactive assistance allows for alternating levels of help, encouraging patients to re-learn how to use their arms.

Vergaro said, "[Stroke](#) survivors perform arm movements in abnormal ways, for example by elevating the shoulder in order to lift the arm, or leaning forward with the torso instead of extending the elbow. Use of such incorrect patterns may limit their ability to achieve higher levels of movement ability, and may lead to repetitive use injuries. By demonstrating the correct movements, a robot can help the motor system of the subject learn to replicate the desired trajectory by experience".

**More information:** Self-adaptive robot training of stroke survivors for continuous tracking movements, Elena Vergaro, Maura Casadio, Valentina Squeri, Psiche Giannoni, Pietro Morasso and Vittorio Sanguineti, *Journal of NeuroEngineering and Rehabilitation* 2010, 7:13, [doi:10.1186/1743-0003-7-13](https://doi.org/10.1186/1743-0003-7-13)

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