Robot-assisted training compared with an enhanced upper limb therapy programme and with usual care for upper limb functional limitation after stroke: the RATULS three-group RCT

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Plain English summary

The RATULS 3-group RCT

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Plain English summary

Many people who have arm weakness following a stroke feel that insufficient attention is paid by rehabilitation services to recovery of their arm. Unfortunately, it is currently unclear how best to provide rehabilitation to optimise recovery, but robot-assisted training and therapy programmes that focus on practising functional tasks are promising and require further evaluation.

The Robot-Assisted Training for the Upper Limb after Stroke (RATULS) trial evaluated three approaches to rehabilitation for people with moderate or severe difficulty using their arm. These approaches were robot-assisted training using the Massachusetts Institute of Technology-Manus robotic gym system (InMotion commercial version, Interactive Motion Technologies, Inc., Watertown, MA, USA), an enhanced upper limb therapy programme based on repetitive practice of functional tasks and usual care. Robot-assisted training and the enhanced upper limb therapy programme were provided in an outpatient setting for 45 minutes per session, three times per week, for 12 weeks, in addition to usual care.

The Massachusetts Institute of Technology-Manus robotic gym system was selected as it was felt to be the best available technology. The participant sits at a table, places their affected arm onto the Massachusetts Institute of Technology-Manus arm support and attempts to move their arm to play a game on the computer screen. Movements are assisted by the Massachusetts Institute of Technology-Manus if the patient cannot perform the movements themselves.

The results of the RATULS trial show that robot-assisted training did not result in additional improvement in stroke survivors' arm use when compared with the enhanced upper limb therapy programme or usual care. Stroke survivors who received enhanced upper limb therapy experienced meaningful improvements in undertaking activities of daily living, when compared with those participants who received either robot-assisted training or usual care. Participants who received enhanced upper limb therapy also experienced benefits in their mobility, compared with usual care participants.

Participants and therapists found both therapies acceptable, and described various benefits. A health economic analysis found that neither robot-assisted training nor the enhanced upper limb therapy programme was a cost-effective treatment for the NHS.

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This report

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