

Final report summary:

**Repeated practice
of everyday
tasks to improve
arm & hand
recovery**

Development and feasibility evaluation of a repetitive functional task practice (RFTP) programme for upper limb recovery early after stroke.

PROJECT CODE: TSA 2010/05

PRINCIPAL INVESTIGATOR: PROFESSOR HELEN RODGERS

INSTITUTION: NEWCASTLE UNIVERSITY

Why did we fund this research?

Loss of arm function affects up to 69% of patients with acute stroke. Patients report that it is one of the most distressing long term consequences of stroke and that standard rehabilitation offered by the NHS does not pay sufficient attention to upper limb recovery.

Repetitive functional task practice (RFTP) is a promising therapy which involves repeated active multi-joint movements (tasks) directed towards functional goals. It is a treatment that selected patients can undertake themselves after an initial therapy assessment, with on-going regular supervision from a therapist.

Systematic reviews suggest that recovery may be improved by RFTP therapy but highlight the need for further research in this area^{1,2}. RFTP therapy could be provided throughout the NHS if it is found to be effective.

This project aimed to establish the feasibility of a large, multi-centre randomised controlled trial (RCT) to determine the clinical effectiveness and cost-effectiveness of an upper limb RFTP therapy programme for patients early after stroke.

The research was led by Professor Helen Rodgers, Clinical Professor of Stroke Care at Newcastle University in collaboration with colleagues from the University of Glasgow, Glasgow Caledonian University, University of Leeds, and the University of Central Lancashire.

There were four stages to the research: the development of the upper limb RFTP therapy programme and training materials for therapists and patients; testing and refining the programme and study documents; a pilot RCT; and development of a protocol for a large multi-centre RCT.

The first phase of the study was to develop the upper limb RFTP therapy programme. The theoretical basis of RFTP and the structure and content of RFTP therapy programmes had been used in previous research were reviewed. Next, the upper limb RFTP therapy programme was developed by the study team with advice from stroke physiotherapists, occupational therapists, patients and carers.

The upper limb RFTP therapy programme was developed for patients with mild or moderately severe upper limb impairment (to be eligible patients needed to be able to lift their affected hand off their lap while sitting) and began within 14 days of stroke. An initial assessment was undertaken by a stroke physiotherapist or occupational therapist and the patient and therapist agreed goals for upper limb rehabilitation. The patient then selected the activities which they wished to practice relating to washing, dressing, eating/drinking and an optional activity. They were asked to practice these activities twice per day for four weeks. Participants were reviewed by the therapist twice per week and treatment was adjusted according to progress. The upper limb RFTP therapy programme was continued at home if the patient was discharged prior to four weeks.

Training materials and a therapy manual were produced for stroke unit therapists. Participants received an individualised upper limb RFTP therapy handbook which included guidance about practising their chosen activities along with sections to log their practice and provide feedback about the programme. This enabled the amount and content of therapy sessions to be recorded.



Daily living task of using a mobile phone

For the second phase of the study, seven stroke patients were recruited from two stroke units in the North East of England and received the RFTP therapy programme. Minor changes were then made to the RFTP therapy programme and study documents based upon this experience and patient feedback.

The third phase of the study was a three centre, pilot RCT to demonstrate the feasibility a larger, multi-centre study to evaluate the RFTP therapy programme. Participants were randomised to receive the upper limb RFTP therapy programme or usual care.

Clinical outcomes were collected by a 'blinded' outcome assessor at one and three months after randomisation. The following data were collected: clinical assessment of arm function (Action Research Arm Test); grip strength (dynamometer); arm strength (Motricity Index); and extended activities of daily living (Nottingham Extended Activities of Daily Living Index).



Daily living task of combing hair

What did the research find?

Twenty four stroke patients consented to participate in the study over the 38 week recruitment period. The target recruitment for each site was 1-2 participants per month and two of the sites met this recruitment target. One month and three month assessments were completed by 92% and 83% of participants.

No adverse events attributable to the upper limb RFTP therapy programme were reported. Feedback from patients and therapists about the programme was largely positive and their suggestions were incorporated into the design of a multi-centre RCT.

It was demonstrated that a multi-centre RCT of an upper limb RFTP therapy programme is feasible. The upper limb RFTP therapy programme is acceptable to patients and therapists and it is possible to record the amount and content of RFTP therapy received, which is a weakness of some previous studies. Undertaking this work has emphasised the need to carefully monitor adherence to the intervention as well as recruitment and attrition in RCTs³.

The research team is working in collaboration with colleagues in Bristol, Birmingham and Australia, who have undertaken similar work in this area, to combine their expertise. They plan to develop a protocol for a multi-centre, RCT of upper limb RFTP therapy.

What does this mean for stroke survivors?

For many with arm and hand weakness after stroke, repeated task-specific exercises could lead to improved independence in activities of daily living, when compared with current usual care.

A larger, definitive trial is required to answer this question. If successful, the findings could then be incorporated into clinical guidelines to help recovering stroke survivors across the UK and beyond.

References

1. French B, Thomas LH, Leathley MJ, Sutton CJ, McAdam J, Forster A et al. Repetitive task training for improving functional ability after stroke. Cochrane Database of Systematic Reviews 2007;4:CD006073.
2. Pollock A, Farmer SE, Brady MD, Langhorne P, Mead GE, Merholz J et al. Interventions for improving upper limb function after stroke. Cochrane Database of Systematic Reviews 2014;11:CD010820.
3. Brkic L, Shaw L, van Wijck F, Francis R, Price C, Forster A et al. Repetitive arm functional tasks after stroke (RAFTAS): a pilot randomised controlled trial. Pilot and Feasibility Studies. 2016 Aug 17;2(1):50.

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