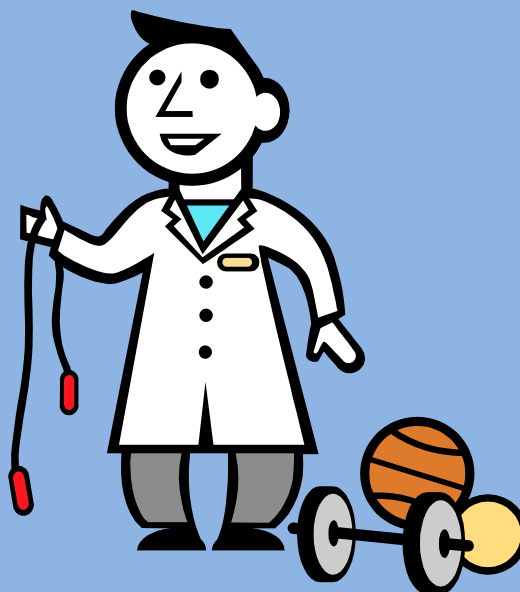


Robot Assisted Training for the Upper Limb after Stroke

RATULS

Enhanced upper limb therapy 1: **Programme overview**



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1. Purpose of this document

This document gives an overview of the enhanced upper limb therapy programme being used in the RATULS study. It is intended to serve as a reference and resource guide for clinicians delivering the enhanced upper limb therapy programme.

2. Introduction

The RATULS study is a three group multicentre randomised controlled trial to determine whether robot assisted training improves upper limb function after stroke. Robot assisted training is being compared to i) an enhanced upper limb therapy programme consisting of repeated practise of everyday activities using the arm and ii) usual NHS rehabilitation. Stroke patients with reduced arm function who wish to take part in the trial are randomly assigned to either robot assisted training, enhanced upper limb therapy or usual NHS rehabilitation.

The RATULS enhanced upper limb therapy programme consists of task-orientated practice aimed at participant-centred goals. It has been designed to facilitate upper limb function, reduce learned non-use of the affected arm and reduce arm impairments that are commonly found in people who have had a stroke.

The programme has been developed from upper limb therapy programmes used in the Botulinum Toxin for the Upper Limb after Stroke (BoTULS) trial^[1, 2] and the Repetitive Arm Functional Tasks after Stroke (RAFTAS) project^[3].

3. Summary of the enhanced upper limb therapy programme

The RATULS enhanced upper limb therapy programme consists of three 45 minute therapy sessions per week for 12 weeks. One hour has been allocated for each session to allow for set-up, preparation and completion of study documents. The total number of therapy sessions per participant is 36. In each therapy session, participants practise activities to work towards their upper limb rehabilitation goals. Upper limb rehabilitation goals are selected at the initial therapy session and reviewed/adjusted at sessions 12 (end of week 4) and 24 (end of week 8).

Types of goals/activities

To facilitate delivery of the RATULS enhanced upper limb therapy programme, a list of potential goals and a description of suggested activities for each goal, has been prepared. Whilst it is anticipated that this will cover many participant choices, it is acceptable for alternative goals and activities to be determined and used the discretion of the local therapist. The prepared goals/activities cover washing; dressing; eating and drinking and 'other' categories.

Types of practice

Activities are divided into two types: 'whole-task' or a 'part-task'. Whole-task activity practice consists of practising all of the components of the task in sequence. Part-task activity practice consists of practicing a specific part of a task. Part-task practice is appropriate if a participant has difficulty with a specific part of a task as it will enable them to focus on this particular aspect independently to completing the task as a whole. The 'whole-task' and 'part-task' activities prepared for RATULS are described in a series of flowcharts which show how to complete each activity step by step. Choice of a whole-task or part-task activity for each goal will be dependent on participant ability. Following accomplishment of a 'part-task' activity participants progress to practise the next 'part-task' activity in the step by step flowchart. Should a 'whole-task' activity be accomplished before a goal review session, the flowcharts include suggestions for adaptations to the activities for further practice.

Intensity of practice

To achieve functional improvement after stroke, a few hundred repetitions are required each session^[4]. Therefore, in this study we should aim – where possible – to include a few hundred repetitions in each session.

What is a repetition?

- For whole task practice, completion of the whole task (from the beginning to the end of the flowchart) counts as one repetition, i.e. from the start position to a return to the start position or to completion of the task (if different from the start position).
- For part task practice completion of the *component* of the task counts as one repetition.

(Note: a continuous task (e.g. walking while carrying a plate) should be interpreted as a discrete task for the upper limb and repetitions should be counted as such (e.g. picking a plate up, carrying it and putting it down again = 1 repetition).

Working through each session

At the initial therapy session, up to four upper limb rehabilitation goals of importance to the participant will be agreed and the activities to practise to achieve these goals subsequently determined. Participants will then undertake a brief warm up consisting of gentle stretching of the upper limb, prior to practice of the chosen activities. The order to practise the activities and the time to spend on each activity will be at the discretion of the therapist and participant according to the participant's rehabilitation priorities.

At the second and subsequent therapy sessions, following a brief warm up (if necessary), practice of the selected activities will continue, with the order to practise and time to spend on each activity being at local discretion. At therapy sessions 12 (end of week 4) and 24 (end of week 8), progress towards goals will be reviewed. If the participant has achieved a goal, a new goal will be set and a new activity to practise selected. If the participant is finding a goal or activity too challenging or they are experiencing other problems, an alternative will be chosen.

At the final therapy session (36, end of week 12), practice of activities will continue but part of the session will also be dedicated to 'summing up' with feedback to the participant about progress over the programme and advice about maintaining upper limb function in the longer term. There will also be an opportunity for participants to give views on the therapy programme.

4. Enhanced upper limb therapy staff roles and responsibilities

The enhanced upper limb therapy programme is intended to be delivered by therapists appointed or seconded to work with a RATULS study centre team.

It is intended that day to day therapy sessions are delivered by a therapy assistant with supervision and advice from a senior therapist. The senior therapist is also responsible for regular participant reviews.

Senior Therapist:

The senior therapist is responsible for:

- Week 1 (session 1):
 - Initial assessment, goal setting and activity choice
 - Supervision of the warm up stretching (if necessary)
 - Supervision of initial activity practice.
- Week 4 and 8 (sessions 12 and 24):
 - Evaluation of progress
 - Upper limb reassessment and review of goals.
 - Setting new goals (where appropriate)
 - Choosing new activities to practise (where appropriate).
- Week 12 (session 36):
 - Giving feedback about progress
 - Giving advice about maintaining upper limb function in the longer term.
- Supervision and support for the therapy assistant throughout the programme
- Completing relevant sections of the enhanced therapy programme paperwork
- Ensuring that the enhanced upper limb therapy programme is delivered as per protocol.

Therapy Assistant:

The therapy assistant is responsible for:

- Day-to-day enhanced upper limb therapy sessions
- Reporting any concerns about participants to the senior therapist
- Acting on advice given by the senior therapist
- Completing relevant sections of the enhanced therapy programme paperwork
- Ensuring that the enhanced upper limb therapy programme is delivered as per protocol.

5. RATULS enhanced therapy summary diagram



6. Other important points about the RATULS enhanced therapy programme

The RATULS enhanced upper limb therapy programme is based on the following principles:

It should be:

- Relevant for participants
- Challenging
- Achievable
- Promote long-term benefits (as opposed to short term performance benefits)
- Engaging
- Standardised in terms of treatment principles, while the content should allow some tailoring to individual participants' goals and abilities.

It is acknowledged that the programme is somewhat prescriptive and that a personal, tailor-made programme would be more representative of normal clinical practice. However, within the context of this research project, the benefits and drawbacks of an individual approach had to be balanced against the need to avoid potential confounding variables and also to record the therapeutic input in sufficient detail to enable replication of the study. Therefore, principles of the programme have been standardised, whilst leaving sufficient opportunity for specific task requirements to be fine-tuned to the capabilities and goals of each individual participant.

7. Enhanced upper limb therapy documents

This Enhanced upper limb therapy 1: Programme overview manual is part of a series of documents developed to describe the RATULS enhanced upper limb therapy programme. The other documents in this series are:

- Enhanced upper limb therapy 2: How to deliver the programme
- Enhanced upper limb therapy 3: Warm-up stretches, goal choices and activity flowcharts

8. RATULS co-ordinating centre

For further information please contact the RATULS co-ordinating team:

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9. References

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