Ulster University

A RANDOMISED CONTROLLED TRIAL OF MIRROR BOX THERAPY IN UPPER LIMB REHABILITATION WITH SUB-ACUTE STROKE PATIENTS

REFLECTS

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About REfLECTS

This is a multi-centred randomised controlled trial based throughout Ireland; investigating the use of mirror box therapy (MBT) in upper limb rehabilitation, with a post stroke population (0-3 months)

Background

How did we arrive here?

Northern Health and Social Care Trust

Ulster University

Pilot Study

- Pilot Randomised Controlled Study of n=40 participants (20 Control:20 Intervention) between January 2015-January 2018;
- Participants recruited from Northern Health & Social Care Trust;
- Funding from United Kingdom Occupational Therapy Research Foundation '2014 Research Priority Grant'

Aims

- To evaluate the feasibility of patient recruitment within an in-patient sub-acute setting;
- To assess the feasibility of delivering MBT as a component of OT treatment in the sub-acute in-patient population;
- To evaluate the sensitivity of the outcome measures for use in a fully powered trial and conduct a power calculation;
- To conduct a preliminary analysis of the data to identify potential treatment gains within and between the 2 groups;.

Findings

- More sensitive screening for cognitive deficits and post-stroke fatigue is required;
- MBT delivery was feasible however, maintaining blinding of the researcher required further consideration;
- Outcome measures were sensitive for use (Turtle et al 2018); 180 participants would be required to support a fully-powered trial;
- Total Satisfaction scores was greater in the Intervention group than in the Control group,

Stroke

Stroke can result in the loss of movement to one side of the body. This can make everyday tasks such as washing, dressing, feeding, walking and household activities more difficult. To help regain movement, the brain needs to relearn how to move the arm and leg.

- **Stroke is a major cause of complex disability (Mendis 2013).**
- **Around half of stroke survivors are left with significant, long-term effects including deficits of the upper limb (Higgens et al 2005), resulting in reduced independence in daily activities (Lang et al 2013).**
- **Occupational therapists play a vital role in rehabilitation of the upper limb, enabling stroke patients to increase their independence and self-manage their condition (Allied Health Professions Federation 2005, ISWP 2012).**

Mirror Box Therapy

Mirror box therapy is a relatively new intervention in the rehabilitation of upper limb function after stroke.

- **It is thought that mirror visual feedback can regenerate neural networks that control limbs and encourage the return of movement (Deconinck et al 2015);**
- **In mirror therapy, the participant performs activities with their unaffected limb but because of the reflective surface on the box, it appears as though their affected limb is moving.**

Current Research

A Cochrane review by Thieme et al. (2012) on the use of mirror therapy in stroke rehabilitation showed that it may improve movement, completion of daily activities and reduce pain, when used with standard treatment.

- **Existing research studies in mirror box therapy, however, are limited due to variation in the time since onset of stroke across participants (ranging from 3-12 months) (Altschuler et al 1999, Yavuzer et al 2008).**
- **Few studies have included patients in the sub-acute period post stroke (0- 3 months), yet this is the population considered most likely to benefit from this therapy at the early recovery stage.**

AIMS OF THE REFLECTS STUDY

THE STUDY PLACES EMPHASIS ON:

1) **DETERMINING THE UPPER LIMB MOVEMENT, FUNCTIONAL, QUALITY OF LIFE AND OCCUPATIONAL GAINS ACQUIRED THROUGH MIRROR BOX THERAPY BETWEEN BASELINE, HOSPITAL DISCHARGE AND 12 WEEKS POST DISCHARGE;**

2) **EXPLORING THE EFFECT OF TIME, TREATMENTS AND PATIENT DIFFERENCES ON UPPER LIMB MOVEMENT, FUNCTIONAL, QUALITY OF LIFE AND OCCUPATIONAL GAINS ACROSS ALL MEASUREMENT POINTS.**

The South West Acute Hospital (SWAH)

Overall our aim is to recruit 180 participants with 45 from the SWAH

Our team:

Arlene Little – Clinical Lead Occupational Therapist in SWAH

Anna Maguire – Stroke Specialist Occupational Therapist in SWAH

Warren Abercrombie – Research Associate from Ulster University

Site about to open!

2 Stroke Specialist Physiotherapists are supporting with recruitment and consent

Participants

We aim to recruit 180 patients to participate in the study.

0-3 months post stroke

WITH

Upper limb deficits

Have a first diagnosis of CVA in the last three months resulting in upper limb motor loss;

Have upper limb therapy designated as a main portion of goal directed treatment programme;

Study inclusion and exclusion criteria

To take part in the study, participants must:

- Be 18 years and over;
- Be a newly admitted inpatient of the rehabilitation ward;
- Be able to follow two part spoken or written commands in the English language;
- Be able to perform at least one of the upper limb movements as per the Viatherapy application for post stroke arm recovery;
- Score 35 or below on the Fatigue Severity Scale of the Fatigue Assessment Inventory;
- Score above 19 on the Montreal Cognitive Assessment (MoCA);
- **Consent to take part in the study.**

Study Design

Participants are randomly allocated to either:

The control group

who receive standard care (standard occupational therapy upper limb rehabilitation)

OR

The treatment group

who receive standard care alongside mirror box therapy

Control group:

- Standard occupational therapy consists of 3-5 sessions per week of approximately 45 minutes duration;
- This classic rehabilitation treatment is based upon neurodevelopmental theory using the Bobath approach of postural control and repetitive task training.

Treatment group:

In addition to the standard occupational therapy treatment outlined above,

- Participants are required to perform two 20-minute sessions of mirror box therapy, five days/week for the duration of their in-patient stay;
- The mirror box therapy programme consists of eight gross and fine motor movements.

Outcome Measures

Are recorded by the researcher at:

- **Baseline,**
- **Every 2 weeks as an in-patient,**
- **At discharge and**
- **12 weeks post discharge.**

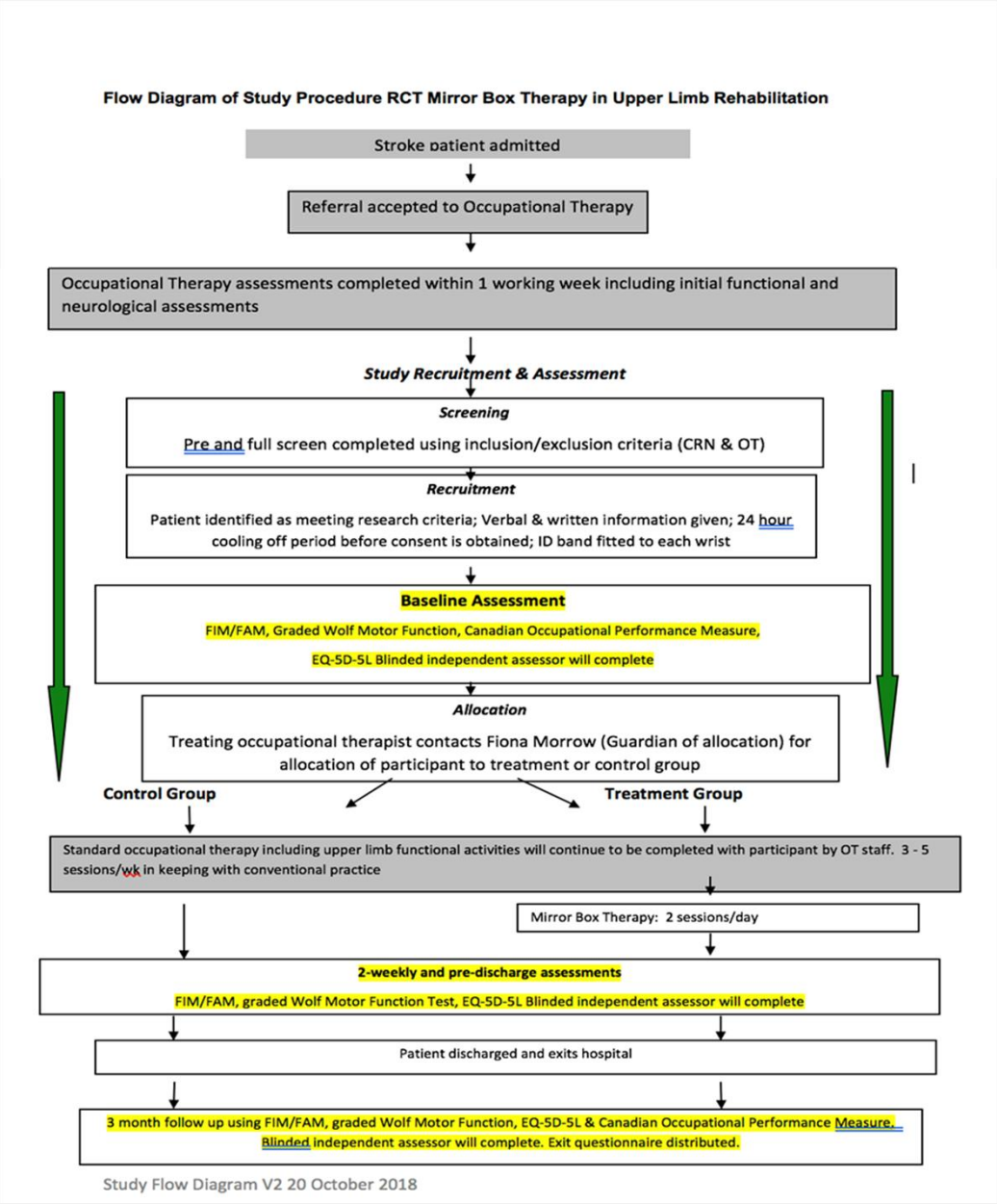
The researcher is blinded to group allocation.

Blinding is a technique, where researchers or participants in a trial, are intentionally kept unaware of which treatment participants have been randomly allocated to.

Blinding is an important part of any trial as it prevents unconscious or conscious bias in the implementation of a clinical trial.

Study Procedure

Flow Diagram



Study Flow Diagram V2 20 October 2018

Follow our progress

On our Twitter account!

@REfLECTS_Study

Assessing the effectiveness of mirror box therapy (MBT) in upper limb rehabilitation with sub-acute (0-3 months) stroke population. #HealthInterventionResearch

@REfLECTS_Study

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THANK YOU

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