mCIMT
For Trainers

Overview
Everyone receive a Box link?
Overview of mCIMT
10 consecutive weekdays

In clinic
- 2 hours/day (120 minutes)
  - First 30 minutes simultaneously with tDCS stimulation condition
  - Constraining Mitt – on less affected hand during full 2 hours

Home Practice
- Mitt- for at least 6 additional awakening hours/ day while away from the study
- Send home with a few activities during the 6 hours

Task structure

Task Practice (TP)
- To promote increased use of the more affected upper extremity during functional activities
- Simulate ADLs/ IADLS
- 15-30 minutes per task

Adaptive Task Practice (ATP)
- Training method in which a motor or behavioral objective is approached in small steps, by successive approximations (i.e., parts of tasks)
  - or a task is gradually made more difficult in accordance with a participant's (motor) capabilities
- ATP is performance sensitive in that the difficulty of the task is adjusted through feedback from performance.
- Completed in approximately 10 trial segments for up to 15 to 30 minutes.

During the 2 hours in clinic

Video examples
General “rules” for TP and ATP

- A trainer should be present during the entire activity for safety monitoring.
- Participants should wear the mitt throughout the activity
  - Trainer acts as second hand
- Tasks should be modeled for the participant
- Activities selected should be contextually appropriate (i.e., with regards to interests) and challenge movements required to improve.
- Performance regressions are never punished
  - If a participant is experiencing excessive difficulty with a task, a simpler task involving similar movements can be substituted.
- Menu Driven
  - Both are 15-30 minutes segments

Menu Driven

Activities should be:

- Challenging yet feasible
- Contextually appropriate (i.e., with regards to interests)
- Challenge movements that require improvement

- All tasks are menu driven
  - Activity Log: document to demonstrate what tasks have been attempted and TIME
- Training will primarily consist of TP
  - If unable to perform TP or need to work on specific movement then may select activities from a menu of ATP
    - ATP activities are comprised of the basic units or components of larger activities employed in TP
    - ATP activities focus on improving skills such as grasp, manipulation, dexterity, gross motor control, endurance, timing, and active range of motion.
  - Whenever possible, ATP should be transitioned into TP activities as the subject’s skill level increases.

Home Practice

- Participants will wear the mitt for at least 6 hours of waking hours while away from clinic
  - Participants will not be allowed to use the constrained hand within the task effort; this will be by self-report at the using the “Beginning of Training Questions”.
  - Behavioral techniques to enhance mitt use outside of the research clinic will include:
    - the use of a behavioral contract
    - daily recording forms
    - encouragement from the supervising trainer to practice specific tasks daily at home

At home

Questions at Beginning of Training Each Day

Did you wear the mitt for 6 hours/day since you left the clinic last time? If not, how much did you wear it?

What was it that prevented you from wearing it for 6 hours?

Did you practice the home practice tasks that you were asked to do? Please describe any successes and challenges you had with these.

Name three other activities you completed with your affected hand since you left the clinic last time?
Behavioral Contract

**Background**

- **Purpose:** to enhance compliance with the requirements of CIMT outside the clinic setting while assuring the safety of the participant.
- **Goal:** is to achieve use of the weaker UE 6 hours while awake when out of the clinic.
- The BC formally engages the participant in actively exploring more ways to use their UE in their home environment & in adopting a problem-solving approach to accomplish that end.

**Application**

- The BC should be implemented at the end of the first treatment day when the participant will have had some experience wearing the mitt and performing tasks with the weaker UE.
- Once the BC is completed on the first day, it should be discussed frequently, and modified if needed, throughout the intervention period.

### Task Practice (TP)

- To promote increased use of the more affected upper extremity during functional activities
- Simulate ADLs/ IADLS
- TP should be completed for 15-30 minutes per task.

### Adaptive Task Practice (ATP)

- Training method in which a motor or behavioral objective is approached in small steps, by successive approximations (i.e., parts of tasks)
  - or a task is gradually made more difficult in accordance with a participant’s (motor) capabilities
- ATP is performance sensitive in that the difficulty of the task is adjusted through feedback from performance.
- Completed in approximately 10 trial segments for up to 15 to 30 minutes.

### Breakout Session for Trainers

ATP will ONLY be in lab/clinic, participants will not be sent home with ATP tasks.
Definitions

Feedback: “Providing specific knowledge of results about a participant's performance on a trial or practice session” (i.e., usually the number of repetitions in a defined time interval or time required to perform a task or specific number of repetitions).

Coaching: “Providing specific suggestions verbally to improve performance on a practice trial or session.”

Encouragement: “Providing verbal motivation to participants to promote maximal effort and encouragement” (i.e., “that’s good”, “keep trying”).

Modeling: “When a trainer physically demonstrates a task activity with the purpose of improving a participant’s performance.”

Daily Recording Forms

• The trainer will record a detailed schedule of all clinical activities carried out each day of the intervention. This schedule includes:
  • **type** of activity
  • approximate **time** devoted to each activity
  • any **rest time** should be documented
  • specifically note if there are times when the **mitt is put on and taken off**
Specific Task Practice (TP) Activities Guidelines

- **15-30 minutes.**
- **challenging yet feasible**
- **periodically provide verbal encouragement or coaching**
  - (i.e., "you're doing great, keep it up" or "you should use your thumb for that activity")
  - At a minimum, encouragement should be provided **every 5 minutes**.
    - More frequent encouragement and coaching are desirable if time permits.
  - After completing an entire TP activity, the participant should be given feedback regarding their performance.

**Encouragement:** “Providing verbal motivation to participants to promote maximal effort and encouragement” (i.e., “that’s good”, “keep trying”)

**Feedback:** “Providing specific knowledge of results about a participant’s performance on a trial or practice session” (i.e., usually the number of repetitions in a defined time interval or time required to perform a task or specific number of repetitions)

**Information regarding the TP activity (method, grading), date accomplished, time required, and performance results should be recorded daily. Changes on the TP recording form should be shared with the participant.”

**Feedback:** Once a task activity is selected, the task method, grading method and feedback variable(s) used should remain constant throughout the intervention period.
Feedback: “Providing specific knowledge of results about a participant’s performance on a trial or practice session” (i.e., visually the number of repetitions in a defined time interval or time required to perform a task or specific number of repetitions).

Coaching: “Providing specific suggestions verbally to improve performance on a practice trial or session.”

**Task Practice Recording Form**

- **Task Practice Activity** (Method, Grading): Scooping with a spoon-
- **Time Spent on Activity**: 28 min
- **Other Feedback**: Scoop/dip from one bowl to another; back to one cycle.

**Feedback Variable**

- **Date**: 2-28-19
- **Time per cycle**: 28 min
- **Feedback**: Many trials with both hands used.
- **Progression**: Increasing work on minimizing abdominal and using increasing rotation; cycles were 5, 6, and 30 min

**New tasks**

1. If new activities are designed that better meet the needs of the participant, they must seek approval from the Standardization Committee before using it as part of the intervention.
2. Approval can be obtained by describing the activity using the appropriate format (i.e., including activity description, potential task progression, potential feedback variables, and movements emphasized) and emailing it to the committee (fritz@sc.edu).
3. Within 2 business days, we will review the activity, provide suggestions if needed, and inform the site submitting the new task activity of its acceptability.
4. If approved, the new task activity will be shared with all personnel across all sites.

**CMT Evaluation and Training > Trainers > Other forms > TPATP template for new tasks.docx**
Specific Task Practice (TP) Activities Guidelines

- Videos
- Review TP Menu of items

Specific Adapted Task Practice (ATP) Guidelines

10 trial segments for 15 to 30 minutes
- Specific tasks should be selected for participants by considering:
  a) specific joint movements that exhibit the most pronounced deficits (these can be determined from the WMFT or Fugl-Meyer assessments, but should not include exact movements—do NOT “teach to the test”),
  b) the joint movements that trainers believe have the greatest potential for improvement
  c) participant preference among tasks that have similar potential for producing specific improvements.

When to advance the task?
- When the participant can accomplish the task with minimal effort—reached a relative plateau with regards to performance.
- When a participant has successfully performed 10 trials in a row with no improvement evidenced in their performance (plateaued)

How to advance the task?
- Any of the task control parameters (spatial or temporal) can be progressed to increase the difficulty of the task (e.g., time, number of repetitions, height, distance, etc.).
Specific Adapted Task Practice (ATP) Guidelines

- **Positive reinforcement** or reward is provided visually and verbally:
  - **Visually**
    - (i.e., using ATP data forms to graph improvement in the performance)
  - **Verbally**
    - An important function of the trainer is to act as a "cheerleader"
      - continuously encouraging the participant on a moment-to-moment basis to keep improving their performance (encouragement)
    - Encouragement or coaching should be carried out with the participant verbally on at least 80% of the trials (i.e., during at least 8 out of a 10-trial set).
  - Rest intervals should be allowed during each ATP session
    - The rest period is usually the same length as the trial period, though longer intervals are sometimes needed to prevent fatigue.
  - **Placement of equipment** used in practice should be recorded on the ATP data recording forms so the task can be duplicated.

Specific Adapted Task Practice (ATP) Guidelines

To quantify a task, only one **task control parameter** can be allowed to vary:

- For example, for an elbow extension task, there would be 3 parameters: time, number of repetitions, and distance.
- The **time and number of repetitions can be held constant** and the distance can be slowly increased until the participant can no longer perform a specified number of extensions in a given period of time (e.g., 10 extensions in 30 sec.).
- Alternatively, **distance can be held constant** (e.g., 8 inches) and the participant would be encouraged to progressively increase the number of repetitions for a set time (e.g., 30 seconds).

- Failure to vary only one parameter results in the quantification no longer being meaningful.
- If the trainer feels that the training would benefit from varying a second parameter that would be permissible.
- However, in such a situation training now involves a different task that must be quantified as a **new, separate entity**, meaning that you start a new 15-30 minutes for the new task.

**ATP Recording Form**

- Task 2:
  - Time start
  - Time end
  - Modeling done?
  - Description:
  - Additional annotation:
  - Comments:

- Placement of equipment:
  - visually
  - verbally

- **Participant ID:**
  - **Visit #:**
  - **Trainer:**
  - **Conclusion Date:**

- **ATP Recording Form**

- **Task 4: Core activity**
  - Trial
  - Feedback
  - Time in trial
  - Time in range
  - Score
  - Comments:
  - Additional annotation:

- **Placement of equipment:**
Specific Adapted Task Practice (ATP) Guidelines

- Videos
- Review ATP Menu of items

Mitt, Beginning of Training Questions & Behavioral Contract

Compliance with Mitt

- Safety is our overriding consideration
- Participants should be wearing the mitt in the clinic at all times.
- Completing the “Beginning of Training Questions” with the participant each morning is important.
  - Use this time to find out when the participant is not wearing the mitt at home and why, and then problem solve with them on how they can overcome obstacles so that they can wear the mitt more.
- Compliance, both inside the clinic and outside, promotes the guiding principle of CIMT - that people need to become used to using the affected arm all the time on an unconscious level.

Questions at Beginning of Training Each Day

Did you wear the mitt for 6 hours/day since you left the clinic last time? If not, how much did you wear it?

What was it that prevented you from wearing it for 6 hours?

Did you practice the home practice tasks that you were asked to do? Please describe any successes and challenges you had with these.

Name three other activities you completed with your affected hand since you left the clinic last time?

Questions at Beginning of Training Each Day

[Beginning of Training Questions] form is first used at the beginning of Day 2, but should be introduced on Day 1.

The purposes of the questions at the beginning of training each day are to:

1) monitor the participant’s compliance to wearing the mitt outside of the clinic
2) heighten the participant’s awareness of their activities outside of the clinic and emphasize their accountability
3) provide structured opportunities for the trainer and participant to problem-solve ways to increase use of the weaker extremity outside of the clinic. [Beginning of Training Questions]

- Participants are asked to provide details regarding how the activities were executed (i.e. successfully or unsuccessfully, with or without assistance, with or without the mitt).
Behavioral Contract

**Background**

- **Purpose:** to enhance compliance with the requirements of CIMT outside the clinic setting while assuring the safety of the participant.
- **Goal:** is to achieve use of the weaker UE 6 hours while awake when out of the clinic.
- The BC formally engages the participant in actively exploring more ways to use their UE in their home environment & in adopting a problem-solving approach to accomplish that end.

**Application**

- **EMPHASIZE:**
  - **The BC should be implemented at the end of the first treatment day** when the participant will have had some experience wearing the mitt and performing tasks with the weaker UE
  - Once the BC is completed on the first day, it should be discussed **frequently, and modified** if needed, throughout the intervention period
  - The trainer will frequently be asking the participants about the activities in the BC and the trainer may modify the BC (add or delete items) based on the participant’s performance.
  - The BC is a **formal agreement** between the participant, care partner, and the research team and, as such, it should be taken very seriously.

Before discussing the BC, clinic staff should construct with the participant a daily activity schedule [part of BC document] from the time of awaking in the morning until they arrive in the clinic and from the time they leave the clinic until the time they go to bed at night. This scheduling should be done separately for weekdays and for each of the weekend days (when the schedule may be different).
Behavioral Contract

1. Describe the BC to the participant.
2. Read the entire BC to the participant and care partner. **Give one or two examples** of items they might include in each section.
3. Review with the participant and care partner **their daily activity schedule** and identify the category (e.g., activities in which I will use my more affected arm) for each activity listed.
4. It is very important that as many items as possible be placed in the "activities in which I will use my more affected arm" section. 

To achieve this end, problem solving should be carried out intensively with the participant as a **team effort between trainer, participant, and care partner**. It may be necessary to modify the task, use adaptive equipment, or for the participant to receive assistance from another individual to safely include the activity in this category. This is the central and most important part of the BC. By investing a considerable amount of time at the beginning, treatment can be substantially enhanced.

5. Attempt to **supplement the list** with additional items not included in the daily schedule. Task practice items can be used to supplement the list of activities.
6. Once the items are identified and written in the BC, **read the entire BC**. Frequently check the client’s and care partner’s understanding of the BC terms by asking "do you understand this section" and **having them explain it back**.
7. When the participant reports an increase in arm use or successful problem-solving necessitates revisions in the daily schedule, changes in the behavioral contract may be possible.

• Activities listed in the "both arm" or "unaffected arm" categories may be moved into the "affected arm" category
8. The BC should be **signed by the participant, care partner, and by the trainer**. For many participants, this signature process is meaningful and helps with compliance.

Behavioral Contract

Once the BC is completed on the first day, it should be discussed frequently, and modified if needed, throughout the intervention period.

**Activities in Which I will use my More Affected Arm Only**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.M. Activities using my Affected Arm Only</td>
<td></td>
</tr>
<tr>
<td>P.M. Activities using my Affected Arm Only</td>
<td></td>
</tr>
</tbody>
</table>

**Activities in Which I will use my Unaffected Arm Only**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.M. Activities using my Unaffected Arm Only</td>
<td></td>
</tr>
<tr>
<td>P.M. Activities using my Unaffected Arm Only</td>
<td></td>
</tr>
</tbody>
</table>

**Activities in Which I will use both arms**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.M. Activities using both arms</td>
<td></td>
</tr>
<tr>
<td>P.M. Activities using both arms</td>
<td></td>
</tr>
</tbody>
</table>

**Activities in Which I will use neither arm**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.M. Activities using neither arm</td>
<td></td>
</tr>
<tr>
<td>P.M. Activities using neither arm</td>
<td></td>
</tr>
</tbody>
</table>
Practice BC with partner

Home Practice

- **Home Practice**
  - The purpose is to supplement the participant’s UE use while outside of the research clinic.

- **General Guidelines for Home Practice:**
  - Home practice activities have the characteristics of task practice (*only TP*, not ATP).
  - Keep if “fresh”

- **Home Practice During intervention period**
  - Home practice activities are assigned to the participant at the end of each treatment day.
  - **Usually, only one to two activities are suggested on a weekday;** three or four activities should be suggested on the weekend.
  - The goal of these activities should last **approximately 30 minutes** (there is an added 90 minutes on the weekend).
  - Trainers may loan equipment used for the home practice to the participant. This procedure will simplify the process and increase the likelihood of compliance. Since the mitt should be worn at home, **bilateral tasks should never be assigned.**
  - USE home practice form

Flow through day
Before you can train participants

- Every site must submit video recordings of each trainer as they perform mCIMT.

The expected frequency of review is as follows:

1. Once the trainer has completed required training, send video of pilot participant for fidelity check.
2. Every fourth participant for that trainer will be recorded on day 2 of training and video submitted.
3. Member of Standardization Committee may make a site visit to ensure the adherence of the mCIMT protocol if needed.
4. Changes in trainer or will require steps 1 and 2 above.
5. Additional onsite visits will be conducted as needed.
6. Occasional random requests (no set timing).

Fidelity check

Structure of the Training Fidelity Checks
- Reviewed by Stacy
  - If concerns go to other standardization committee members

Results of Training Fidelity Checks
- Scores results will be returned to the trainer and the site coordinator.
- To gain approval to start data collection, the performance of a site must be ≥ 85% (6 of 7 criteria TP training fidelity form).
  - If not met, sites must continue to run pilot participants until this criterion is met.
- This criterion must also be maintained by all site personnel throughout the project.
  - Check on day 2 of every 4th participant
    - If site personnel fail to meet the criterion after they have begun running participants, they will be asked to temporarily cease running participants until competence is demonstrated again (i.e., they meet the 85% agreement criterion again).
Other details

If patient missed one session, should she/he make up one session?

• Yes. Every effort should be made to make up the session if the participant miss one or more sessions. If a participant miss >2 out of 10 sessions, he/she will be considered as “non-compliant.”

If patient requests a break time during the 2-hour CIMT, what should we do?

• The trainer should be sensitive to such request. Small breaks can be offered to the participant; however, trainer should keep an eye on the total amount break times to ensure the participant to have 2 hours active training time. (see next question).

What is I do not get a full 2 hours of active training time?

• Efforts should be made by the trainer to ensure 2 hours (120 minutes) active training times were spent with the subject on each session. However, please try to wrap the session within 150 minutes. Please be sensitive to requests for break by participants while not to let the participant to take control of the session. We leave the decision to the local trainer.

2 handed tasks:

• If a task activity requires a two-handed subtask (i.e., opening a container by unscrewing a lid), the trainer should assist the participant (i.e., stabilize the container while the participant unscrews the lid).
Strongly recommended

- Marbles
- Rubber bands
- Ping pong balls
- Cotton balls
- Poker chips
- Poker chips and penny slot (different sized slots may be cut into a jar lid with a utility knife. A lid made of HDPE=4 plastic works best)
- Nuts and bolts (varied sizes)
- Misc mail items (envelopes, flyers, junk mail, etc.)
- Tension rod or shower curtain rod small enough to fit in doorway
- Tape measure

- Paper and/or wrapping paper
- Hangers
- Clothes line
- Stapler
- Deck of cards
- Adhesive Velcro
- Kitchen tongs
- Soup cans (varied sizes)
- Extension cord
- Spray bottle

**Required**

- Boxes to change reaching height (cardboard boxes may not be strong enough but boxes for tissue paper work well. Therapy Steps work best but are very expensive)
- Build-up foam (tubing for otoman handles)
- Dryer sheet or non-slip shelf liner
- Masking tape
- Play dough
- TheraPutty
- Dried rice
- Varied containers (bottles, jars, cans with different sized openings, prescription bottles, etc.)
  - including lids
- Blocks (from box and blocks okay)
- Paper clips
- Pennies
- Varies size of balls (paper balls, golf, rubber balls, tennis, racquetball, squash, etc.)
- Varies articles of clothing (shirts, pants, t-shirt, necks, etc.)
- Wash cloths and hand towels
- Clothes pins
- Checkers or Connect Four pieces
- Bowls (varied sizes up to a mixing bowl)
- Cups (varied sizes, shapes and styles) – hard plastic is good for tone/spatiality, thin plastic good for high level grading for sensory impairment
- Therapy trays (hard plastic cups from the dollar store work just as well)
- Mug
- Plates (paper, plastic and ceramic for grading)
- Fork, knife and spoon (multiple sets, plastic and metal)
- Serving spoon or salad spoons
- Dry-erase board and markers (the bigger the better, mount it for overhead reaching and down on a table to mimic cleaning counters)
- Sponges (varied but especially sized to mimic a sandwich and for washing dishes)

**PRACTICE, PRACTICE, PRACTICE**