

HABIT Caregiver Manual



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What is Hand-Arm Bimanual Intensive Training (HABIT)?

Children with hemiplegia have learned to compensate for most upper extremity activities by using their dominant or non-involved arm for most activities. Activities that they have the most problems with are activities that involve using two hands (bimanual activities). These types of activities usually involve functional and play activities such as taking off socks or stacking blocks. Thus, the ability of these children to become fully integrated into school, play, and social areas of their lives can sometimes depend on the degree of impairment and the degree to which they have compensated for that impairment. Increased use of the involved (non-dominant) hand and arm in such bimanual activities may increase their ability to more fully participate all areas of their lives.

From past studies involving constraint-induced therapy, we have learned that the most important factor for improving involved hand and arm function during an intervention is **intensive practice in a child-friendly environment** and not necessarily wearing a restraint. Bimanual practice allows children with hemiplegia to learn and develop strategies for using their affected hand as a typically developing child uses their non-dominant hand.

What is the goal of HABIT?

The goal of HABIT is to have children use their involved hand and arm more spontaneously in bimanual activities. Overall, we want to emphasize activities that require **active use** of both hands but particularly the involved hand. We want the activities to be **fun** and performed in a **positive environment**. We want you to be creative and use the games your child really likes to encourage movement of **both hands**.

Intervention

HABIT focuses on improving upper extremity and hand function children with hemiplegia, whether congenital or acquired.

In this manual we provide example activities described on an individual page and includes: a brief description of the activity, room to make notes of your own, and ways to ***progress skill*** in the task.

What is skill progression?

Skill progression can be defined as a training method in which a goal is achieved in small, successive approximations. That means, you build up to the goal in little increments. The goal for HABIT training is to increase spontaneous use of the hands. As the child gets better at the task, we continue to change the environment in which the task is performed so that the child is continually practicing using his/her involved hand and arm. Little by little, as you notice improvements, you will make the task slightly more difficult. Skill progression involves making the task itself increasingly challenging (by changing the set-up of the task) as opposed to providing verbal instruction. Skill progression is also important because when a task becomes too easy for your child, there is also a chance that it might become boring. Making it slightly more difficult provides an interesting challenge for your motivated child. Be careful though, making a task

too difficult might make your child frustrated. It is important to find a good balance.

What is an example of skill progression?

Let's say you are playing a card game with your child. You may notice that your child has difficulty grasping the top card from a deck of cards that are lying face down on a table. In order to make the task a little easier, you might move the deck closer to your child (by moving it closer to the edge of the table) and holding the bottom cards steady while he/she pulls the top card off. After some time, you may notice that your child gets pretty good at pulling the top card off with your help as described above. **In order to make the activity a little more challenging**, you could push the cards back further away from the edge of the table and away from his/her body. Now he/she has to reach a little further out to pull the card off the top of the deck. You may notice that eventually, he/she gets pretty good at reaching out and turning the cards over when they are further away. **Next, to make the activity slightly more challenging**, you might stop providing assistance with the bottom cards, and let your child pull the top card off by him/herself while he/she stabilizes the bottom cards with the other hand. **The goal is to slowly make the task more challenging over time, but to always keep the activity within a range of difficulty that allows your child to be successful the majority of the time.**

How can I motivate my child to cooperate?

Motivation is a big part of successful training and we want to avoid your child becoming frustrated. According to studies on skill progression, tasks should be made slightly harder when the child has achieved the task with 70-80% accuracy. For example, make the activity slightly more challenging when he/she has met the criteria in 3 out of 5 trials on timed tasks. ***Positive reinforcement*** or ***verbal praise*** is provided with achievement whereas regressions should never be punished. This cannot be stressed enough! It is also important to find some rewards that your child really likes (stickers, yummy food, a fun activity,

etc.) and use them to encourage your child's success.

What if my child gets frustrated?

The last thing we want is for you child to be unhappy or get frustrated during bimanual training. If you ever see that your child gets upset because the task is too difficult or because he/she can't do something, **it is best not to push them** and make them more frustrated. Keep the task difficulty within their range of achievement. Also, in order to keep them from getting bored, change the activities when you see that they lose interest. It is also important to make sure that the activities you play with during training are only used for training. This will help keep the activities interesting and novel.

Should I use my hand to guide my child's hand?

Hand over hand assistance is never used to help a child complete a task. That is, **you should not take the child's hand in your hand to help complete the movement**. Instead, give either verbal instruction, provide an example, or change the constraints (difficulty) of the task so that the goal may be accomplished.

How do I separate "training" time from "family" time?

We understand that the amount of time associated with this intervention is a really big commitment. Our goal is to provide intensive training to improve your child's hand function without affecting your family dynamic in a negative way. Therefore, we feel that it is important that the time you are working with your child should be separate from regular family time. One way to separate training time from family time is finding creative ways to provide a signal to your child that it is training time. For example, some caregivers and their children put on "magic" training hats that are only worn during training. Others set up a special area that is used only (for the most part) for HABIT training. We encourage you to

get creative and find a way that provides some sign to your child that helps keep your interactions during training and interactions during regular family time as different parts of the day.

Do we have to do all 90 hours?

It takes approximately 90 hours of training based on our past studies of the effects of HABILIT on hand function in children with CP. Our previous studies have shown the **one of the biggest contributing factors to improvements is the intensity of training**. For example, when children do less than 90 hours, their hand function improves for a short period of time, but when you assess their ability 6 months later, those improvements have gone away. However, when children do 90 hours of training, the improvements that occur are maintained when assessed up to 6 months afterwards! Therefore, completing all 90 hours of training is a very important part of training.

Typically the 90 hours has been provided over 15 x 6 hour sessions. However we have found that 2 hrs per day (split into 30 min intervals) in the home environment can be beneficial. Although we don't know about whether lower or more distributed doses also work, figuring out ways to incorporate these and functional activities into daily routines can only be beneficial. You will need to figure out the right balance for you and your family.

Activities

Functional Activities

- ◆ **Dressing:**
 - Putting on shoes
 - Putting on pajamas
 - Putting on socks
 - Putting on underwear

- ◆ **Undressing:**
 - Taking off shoes
 - Taking off pajamas
 - Taking off socks

- ◆ **Setting the table:**
 - Putting out silverware
 - Putting out plates
 - Folding napkins
 - Carrying items to the table

- ◆ **Clearing the table:**
 - Removing plates from the table
 - Removing silverware or cups from the table
 - Carrying items to dishwasher

- ◆ **Cleaning:**
 - Wiping surfaces with two hands
 - Sweeping the floor

- ◆ **Doing the dishes:**
 - Putting soap on dishes
 - Rinsing dishes
 - Drying dishes
 - Taking dishes out of dishwasher

- ◆ **Taking care of hygiene:**
 - Brushing teeth
 - Washing face
 - Drying face
 - Brushing hair
 - Washing hands

- ◆ **Eating:**
 - Opening packages
 - Holding bowl and using spoon
 - Cutting with fork and knife
 - Making a sandwich

Play Activities

- ◆ **Balloon pump game:** Balloon tied on end of air pump with handle, child pumps up balloon (balloon can also be used to play afterwards)
- ◆ **Twisting bottle caps:** removing and twisting on, can be used with bottles and caps of different sizes to grade difficulty
- ◆ **Playing with coin banks:** placing coins in coin bank, can include transferring coins/items from hand to hand, can be graded by changing size of hole
- ◆ **Legos;** stacking legos, can grade difficulty by changing location of where pile of legos is placed (i.e. as child reaching improves, move legos further back, or keep in a bucket)
- ◆ **Peg Board:** Moving pegs around a peg board with two hands
- ◆ **Play-doh:** part of activity can be making playdoh together (see ingredients), then making balls, rolling with rolling pin, smashing into pancakes
- ◆ **Puzzles:** use puzzles with big pieces,
- ◆ **Trouble:** game board has big center piece that requires both hands to push down
- ◆ **Connect four:** don't really have to play game, but placing pieces in using both hands, transferring, one hand holding frame while other places piece in slot
- ◆ **Bubbles:** blowing bubbles, one hand holds bottle while other one blows (no spill bottle)
- ◆ **Drawing;** ensure that both hands are being used, i.e. one hand holding bottle while other holds wand
- ◆ **Cards:** flipping cards game
- ◆ **Book reading:** both hands used to hold book, using affected hand to turn pages
- ◆ **Painting:** using both hands to make pictures, finger paints
- ◆ **Beading:** beading big beads onto string, can begin by beading on pipe cleaner, then progress to beading on string
- ◆ **Musical instruments:** beating on drums, shaking maracas in two hands

- ◆ Playing catch with a large ball: make sure ball is big enough that both are hands needed to throw and catch
- ◆ Scissors: cutting paper
- ◆ Opening Tupperware: incorporate into games, keep game pieces or art material in Tupperware, grade difficulty by changing amount of resistance in Tupperware
- ◆ Wrapping gifts
- ◆ Searching for small objects in a bucket of rice

Activities for Younger Kids (1.5-3)

Functional Activities

- ◆ Taking off socks
- ◆ Fastening and unfastening Velcro shoes
- ◆ Drinking from cup that requires two hands
- ◆ Pulling pants up and down: preparing for toilet training
- ◆ Using big spoon while eating: might want to incorporate suction plate
- ◆ “Cleaning” with paper towels: have child imitate caregiver wiping table with both hands
- ◆ “Throwing” clothes in basket: encourage child to imitate throwing dirty clothes in basket

Play Activities

- ◆ Eating: place grapes or cereal in two bowls, opening yogurt, opening wrapping on cookies, hold cup to eat
- ◆ Clown nose: putting on and taking off clown nose, take turns so child imitates
- ◆ Making necklaces: use big beads on a string, or on a pipe cleaner, use big geometric shape beads
- ◆ Play-doh: rolling play-doh with two hands, breaking pieces apart

- ◆ Glitter glues: squeezing glitter glue from bottle with two hands
- ◆ Wedgits: big stacking pieces, stack and unstuck, moving stacked pieces around without dropping
- ◆ Stacking train: pieces that go into train with wheel, also can be used to pull and push (http://www.gummylump.com/files/product/a_181.stacking-train.jpg)
- ◆ Opening and closing: opening tupperware to take out play items, opening boxes, hide and seek in items that need both hands to be opened
- ◆ Finger puppets: placing on both hands, requiring movement
- ◆ Big balls: roll back and forth, throw with both hands, place big ball into laundry basket, bowling pins
- ◆ Inserting balls into bubble gum machine: (<http://www.amazon.com/Unknown-PM9130-Gumball-Machine/dp/B000B6PQ7K>)
- ◆ Reaching for attractive objects in boxes
- ◆ Velcro and laminated pictures: use Velcro pieces to place pictures onto board during a story
- ◆ Tearing paper: tear thin paper, scrunch into balls, glue onto construction paper to decorate drawing
- ◆ Big puzzles: can be graded so that child does it flat on table, then moves on to do it on board that is being held up by caregiver
- ◆ Moving pieces on vertical board with magnets
- ◆ Playing with jack in the box
- ◆ Nesting cups
- ◆ Scavenger hunt: place objects in different locations, child has to pick up objects and place into basket
- ◆ Rings on a cone: stacking and taking off
- ◆ Pretend to cook with old pots and pans, stirring
- ◆ Searching for items in a bucket of rice
- ◆ Removing items from ice cube trays and placing into bucket

Useful Items List

Here is a list of useful items that might help make your activities fun:

Suction plates

Velcro

Magnets

Glitter glue

Big markers

Finger Paints

Construction paper

Balls

Marbles

Tape

Blocks

Tupperware

Textured foam lining (prevents slipping)

Balloons

Balloons can be used for a variety of activities. For example, a pump can be used to blow up the balloons and if positioned and stabilized correctly can be used with both hands by the child to blow up the balloon (of course- you may have to help tie the balloon). Once the balloons are blown up, the most functional activity would probably be a game in which the goal is to keep the balloon in the air for as long as possible using both hands.

How to Progress Skill

- ◆ Decrease number of assists.
- ◆ Ensure open hand to pump.
- ◆ Use smaller balloons which are harder to blow up because they provide more resistance

Notes:

Twisting Bottle Caps

Bottle caps of different sizes can be used. The bottle can be incorporated as a game where the child has to get to the “magic piece” (marble or some other object that fits in bottle) by opening the bottle.

How to Progress Skill

- ◆ Change position of bottle when being opened (i.e. first bottle begins on table, child holds down on it with one hand opens with other to bottle is standing up right while child stabilizes and opens it).
- ◆ Use a bigger bottle.
- ◆ Perform activity on textured foam net lining to prevent slippage then have child perform activity without lining.

Notes:

Legos

Use Legos to build objects. Have the child grasp pieces, push them together, and pull them apart. Build a tower and then have the child take it apart. Also have child take Legos in and out of the box.

How to Progress Skill

- ◆ If child has trouble pulling legos apart, help by loosening them. As child improves, keep the Legos pushed tightly together and have him/her pull them apart.
- ◆ As he/she gets better at grasping, have him/her reach into a tall box to pull the legos out. You can also push the legos a little further back away from the edge of the table.

Notes:

Playdoh

Using playdoh involves manipulating pieces of clay into different shapes. Particular tools that can be used to elicit bimanual movements are a rolling pin, shape press (requires a lot of downward force), and plunger. Have the child push playdoh around on the tabletop, use both hands to roll out the playdoh with a rolling pin, or press one hand over the other with a shape press to make shapes.

How to Progress Skill

- ◆ Increase thickness of playdoh during different activities.
- ◆ Decrease how much you help with the rolling pin.

Notes:

Puzzles

Have child put together puzzles with big pieces. Encourage the child to use both hands when placing pieces together. Also, encourage child to pick up pieces in one hand and transfer it to the other hand. If using a puzzle with smaller pieces, have the child hold the board in one hand while other hand places pieces in.

How to Progress Skill

- ◆ Hold puzzle board up and have child places pieces in as board is standing.
- ◆ Push the puzzle pieces further away from edge of the table so the child has to use more movement at the shoulder to reach them.
- ◆ Provide less stabilization of the pieces for the child so that he/she has to put them together by him/herself.

Notes:

Trouble Gameboard

Trouble is a game that requires the players to press down hard on a centerpiece to advance turns. Have your child press the centerpiece for your and his/her turns. Also, each person can play with two pieces instead of one, so that the two pieces can be moved together with two hands for each turn.

How to Progress Skill

- ◆ Decrease assistance in pushing
- ◆ If pieces that come with game board are too small for child to grasp, use your own bigger pieces (i.e. lego blocks). As child's grasping improves, use smaller pieces.

Notes:

Bubbles

There are two different components to this activity: (1) twisting the cap off of the container and replacing it when done (2) holding the container in one hand while using the wand with the other to blow bubbles.

How to Progress Skill

- ◆ Change the amount of assistance given to your child when he/she is twisting the cap off the container.
- ◆ Have your child hold the bottle over the table (for additional support) initially, then have them hold the hand without the support of the table while the other hands inserts and removes the hand.
- ◆ Show your child different ways to bring the wand up to the mouth to blow the bubbles. Increase the amount of movement at the shoulder and the elbow.

Notes:

Drawing

Use this as an arts and crafts activity with different bimanual components: Capping and uncapping the markers which requires that one hand hold the base of the marker while the other hand pulls the cap off, and holding down a piece of paper with one hand and drawing with the other hand.

How to Progress Skill

- ◆ Change the amount of strength needed to open the markers by capping the lids tightly.
- ◆ Have your child trace a line that you draw. Draw the line in such a way that he/she has to rotate the paper to trace the line.

Notes:

Card Games

Use cards in a variety of ways. Have the child to hold his/her hand of cards in both hands when waiting for turn, have your child help shuffle the deck, pass out the cards, have them flip cards over, hand the cards to their affected hand, and have them help you take them out and put them away in the box.

How to Progress Skill

- ◆ Have you child, using both hands, hold the cards furtthey away from his/her body while he/she is waiting his/her turn.
- ◆ Push the card pile further away from the edge of the table so that your child has to reach further to place cards down.
- ◆ If playing a game like memory, decrease the amount of assistance you provide to help flip the cards.

Notes:

Book Reading

Have your child use both hands to hold the book when reading. Have one hand hold the book while the other hand turns the page.

How to Progress Skill

- ◆ Decrease the amount of assistance provided to turn the page.
- ◆ Change position of book from flat on a surface to upright to require increased involvement of the shoulder

Notes:

Painting

Use finger-paints to make hand prints with both hands. Have your child spread his/her fingers as wide as possible to make the prints. Or, have your child use a paintbrush to make a picture. To make it a bimanual activity, put the paint in a disposable bowl and have him/her the bowl with one hand while the other hand dips the paintbrush.

How to Progress Skill

- ◆ Decrease the amount of assistance provided in opening the paint containers.
- ◆ Move the canvas/paper from being flat on a table and tape up to a surface where your child has to paint on a wall or some vertical surface. This will increase the movement at the shoulder.

Notes:

Beading

Use beads of different shapes and sizes to make necklaces, bracelets, or just to place along a string.

How to Progress Skill

- ◆ Change from using large beads with big holes to smaller beads with little holes.
- ◆ Start with having your child beading on pipe cleaner and then progress to using string.

Notes:

Musical Instruments

Have your child play the maracas, the drums, or on a toy xylophone using both hands.

How to Progress Skill



Notes:

Playing catch with a large ball:

Toss or roll a ball back and forth always keeping mind that both hands should be used.

How to Progress Skill

- ◆ Change from a light, large ball to a smaller, heavier ball.
- ◆ Stand further away so that your child has to throw the ball further to reach you.
- ◆ Change from an underhand toss to an overhead toss.

Notes: