



## In-Hand Manipulation Programme

In-hand manipulation is the term used to describe the ability to move a small object around within a single hand. It is an essential component of the development of fine motor control. Good fine motor control enables you to carry out such tasks as holding pencils, fastening small buttons, using cutlery and being able to tie your shoelaces.

There are three distinct movements required to develop in-hand manipulation skills. They develop in the order listed below. You require to learn all 3 movement types in order to be able to manipulate tools and objects effectively:

- 1. Translation** - This describes the movements of an object from the finger tips to the palm of the hand, e.g. collecting coins into the palm, and from the palm back to the finger tips, e.g. bringing in coins forward to the finger tips to place in a slot machine.



- 2. Shift** - This is used to make the final adjustment of an object between the fingers and thumb ready for use, e.g. positioning of a pencil before use.



- 3. Rotation** - This is movement of an object in more than one plane. It is done simply by making alternating movements between the thumb and the fingers.



The following exercises are a good way of helping in-hand manipulation to develop. They should be carried out by both hands in turn, but always start with the dominant or preferred (writing) hand. These skills develop in a particular order and the exercises below are listed in sequence. It is recommended that this programme be carried out a minimum of 3 times a week in 10 minute slots for a 3 week period.



## Week 1 – Translation (Finger to Palm)

- Place three marbles on the desk in front of your child. Ask them to pick up one marble at a time using their thumb and index finger, and get them to hide each one in the palm of their hand (they will need to use their middle, ring and little fingers to hold the marble there) whilst they pick up the next marble.



Marbles



Butter Beans



Chick Peas



Beads

Once your child can successfully pick up three marbles and hold them in the palm of their hand, ask them to slide them back out, one at a time, from the palm up to their finger tips and place them softly back down on the desk. *As the child becomes more competent at this task, make it more difficult by reducing the size of the object. Try moving onto dried butter beans, dried chick peas, then small beads.*

- Place a number of coins or counters on the desk in front of the child. Ask your child to pick them up one at a time and place into a piggy bank. Repeat this task so that both hands get a turn. You can make your own posting box by upcycling an empty margarine tub or small stacking crisps tube, and cutting a rectangular slot in the lid.



- Ask your child to pick up 5 coins/counters, in each hand, one at a time using their thumb and index finger, until all 10 coins are hidden in the palms of their hands. Once they have picked up all the coins, ask them to slide them back out, one at a time, from the palm up to their finger tips and place them into the piggy bank. *As the child becomes more competent at this task make the task more difficult by asking them to extract a specific coin or a specific coloured counter from the selection in their palms to be placed into the piggy bank.*



### Other Ideas and Suggestions:

Play **Connect 4** but instead of just picking up one coloured disk at a time, the child should pick up 3-6 disks and hide them in their palm. Then they should use alternate hands when placing the disks in.



Create a **necklace** by holding the string/cord in one hand and then picking up a number of beads one at a time and hiding them in their palm. Then start lacing the beads one at a time. Start with large beads then once the child is competent move onto smaller beads.

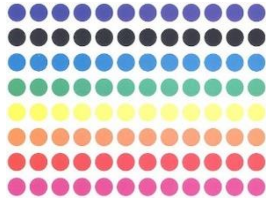
Get the child to pick up small objects with tweezers/tongs/chopsticks and place into a tub or jar.





## Week 2 - Shift

1. Get your child to touch each of their fingertips one at a time using their thumb starting with their index → middle → ring → pinkie and then back from their pinkie → ring → middle → index.



2. Place a different coloured sticky dot on the index, middle, ring and pinkie and ask your child to touch the correct coloured dots with their thumb (changing the order each time)



3. Try to teach your child to snap their fingers with their right and then left hand.

4. Get your child to hold 2-3 playing cards face up (in a neat pile so they cannot see the cards underneath) in their hand. Ask them to 'fan them out' (without using the other hand) so they can read out the cards underneath. This action involves sliding the tip of his thumb across the tips of his fingers with the cards in between. **As the child becomes more competent at this task make the task more difficult by using a larger amount of cards and different size of playing cards.**



5. Give your child a pencil (or you can also use a chopstick) and ask them to hold it as if they were about to write. Get the child to 'climb' their fingers up to the top of the pencil then twirl it over so that their fingers are at the bottom again. Repeat this exercise a number of times.

6. Place a small object (i.e. pencil grip, rubber, a small folded up square of paper or blu-tack) between your child's thumb and index finger and ask them to slide it across all their fingers until it ends up at the pinkie finger and then back again to the index.



7. For this exercise use a large, flat thick rubber band marked with a dot. Place the band on the child's palm with the dot facing them; ask them to use their thumb to slide the band over their palm until the band rotates fully and they can see the mark again.



8. Place a smaller rubber band at the bottom of the child's pinkie and ask them to move it to the ring finger (just using their thumb) by sliding it up the finger and over. Then move on to the middle and index finger.

### Other Ideas and Suggestions:





Get the child to practice doing up and undoing buttons of all different sizes.

Play with Spinning Tops.





## Week 3 - Rotation

1. Make an arrow about 4cm long out of a piece of cardboard (or laminate a paper arrow). Get the child to hold the end of the arrow between their thumb and index fingertip and make the arrow point to the right. Ask them to spin it through 180° to make it face to the left without using their other hand (make sure they only move their fingers and not their entire hand and/or wrist). 
2. Practice spinning a pencil (or chopstick) round between their thumb, index and middle fingers, to make it rotate like a windmill and a propeller. **As the child becomes more competent at this task make the task more difficult by reducing the size of object (i.e. different size paperclips).**
3. Ask your child to screw a nut onto a large bolt as quickly as they can, ensuring that each nut is screwed as far up the bolt as possible. **As the child becomes more competent at this task, reduce the size of the nuts and bolts.** 
4. Get your child to hold a dice in one hand using their thumb and index finger. Ask them to have number 1 (one dot) facing the ceiling. Then get them to display another number using only their thumb, index and middle finger to turn the dice. 
5. Ask your child to rotate a clapping drum using their thumb, index and middle fingers. 
6. Ask your child to screw and unscrew small bottle tops (i.e. water bottle).

### Other Ideas and Suggestions:

Get the child to wind up small toys.



Find two different colours of pegs, separate and put the two half's (different colours) together again. Ask your child to place one specific colour around the inside of a large tub (i.e. an empty ice-cream tub or large empty margarine tub). Then get the child to unclip the peg, turn it around and then re-clip the peg so that the other colour is in the inside of the tub (using only one hand). **As the child becomes more competent at this task, get them to put clothes out on a washing line.**

Place a marble between the knuckles of each finger and get the child to lift their hand off the table (trying not to drop any). Then drop each marble into a container one at a time. **As the child becomes more competent at this task, get them to walk a short distance (i.e. around the table) before dropping off each marble.**

Cut a small piece of bubble wrap and ask the child to pop each bubble between their thumb and index finger.

Play the game "Operation" which helps a child with hand-eye coordination and fine motor skills.

