

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 categories (Dr Charlotte Exner, 1989) within in-hand manipulation skills:

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 **simple** 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.

1. Place three marbles on the desk in front of the child. Ask the child 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 the 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 and move onto dried butter beans, dried chick peas, then small beads (you can also use peas, then lentils and finally grains of rice).**

2. Place a number of coins or counters on the desk in front of the child. Ask the child to pick up one coin/counter at a time and place into a piggy bank (alternatively use a recycled margarine tub or small Pringles tube and cut a slot in the lid) one at a time using both hands separately.



3. Ask the child to pick up 5 coins/counters, in each hand, one at a time using their thumb and index finger, and get them to hide them all in the palm of their hands. Once the child has picked up the coins/counters, 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 for a specific coin or a specific coloured counter to be placed into the piggy bank.**



4. Ask the child to tear off six small squares from a piece of paper. Ask the child to use the fingers of one hand to pick one square up and then scrunch it into a tight ball in the middle of their palm. The child should then repeat the same exercise with the other hand until all six squares have been made into a ball.



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.



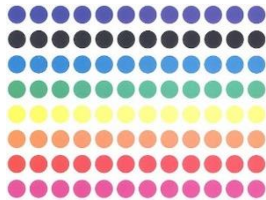
Create a **necklace** by holding the string/cord in one hand and then picking up a number of beads one at a time and hiding them in their palm. Then start lacing the beads one at a time. Start with large beads then once the child is competent move onto smaller beads.

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



Week 2 - Shift

1. Get the child to touch each of their finger tips 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 the child to touch the colour dots with their thumb (changing the colour each time)



3. Ask the child to snap their fingers with their right and then left hand.

4. Get the 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. Hold the pencil (or you can also use a chopstick) and hold it as if you 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 and then repeat 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 the 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. Place a large, flat thick rubber band (place a mark on the band with a felt pen). Place the band on the child's palm ask them to use their thumb to slide the band over their palm until they 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.



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 the 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. Ask the child to hold a dice in one hand using the thumb and index finger. Ask them to have number 1 (one dot) facing the ceiling. Then ask them for another number to face the ceiling only using their thumb, index and their middle finger to turn the dice. 
5. Ask the child to rotate a smile drum using their thumb, index and middle fingers. 
6. Ask the 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 the 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.

