

## What are fine motor skills and why are they important?

Fine motor skills refer to the dexterity, agility and ease by which one uses their hands. We all rely on good fine motor skills to function and perform many tasks at work, rest, everyday tasks and play. We never really think about how well our hands can perform these tasks until we injure, break or lose the use of a hand. When we have a cut on a finger, we often become aware of how our hands usually work as a “well-oiled unit”, and how frustrating it can be to perform everyday simple activities when they don't work as well. Even talking on a mobile phone whilst trying to cook, type or complete activities makes us realise how we need **two hands** that work in unison, for us to complete many activities. So fine motor skills are not just necessary for writing but for virtually everything **we do** every day.

Good hand skills are a combination of many components such as:

- Sensation and sensory feedback
- Ability to use the appropriate grasp pattern
- Ability to use inhand manipulation skills to make minute subtle adjustments for control
- Strength
- The ability to open and close the hand at will
- The ability to use the hand without vision ( proprioception)
- Stereognosis – the ability to sense what is in your hand by feel/ shape/weight
- Bilateral two hand skills
- Grading of lift and force
- Speed and dexterity of fingers
- Motor planning and the ability to sequence a series of movement plans to complete a task e.g. doing up laces.

Children begin to learn to control their hands from 3 months of age and keep refining and developing their hand skills, especially in the 3 – 6 years bracket. After 6 years they generally become quicker and more skilled until they reach about 9 or 10 years of age when their speed and dexterity is similar to that of an adult. Of course, some adults go on to become particularly dexterous by way of practice such as dentists, artists, hairdressers, jewellers , etc just to name a few.

Children growing up in the current times, have the same needs for control and precision with their hand skills but their experiences in order to develop their hands does differ. In the past many young children engaged in chores and activities such as weeding, raking, sweeping, washing and drying dishes etc which helped to build some strength and arch control. Less emphasis and time in messy outdoor play, climbing and rope swings, a shift from heavier wooden toys to more lightweight plastic, a shift to electronic toys with buttons to visually stimulating tech toys, has had a significant impact on this generation of children. This has had a two-fold effect. Firstly, it means that the many natural day to day ways children developed hand strength and control are no longer done frequently enough to develop the same skill level. Secondly the impact of electronic, push button toys and tech toys that require different hand movements and less strength, means the arches in the hand

do not get as much practice in pure strength and muscle loading. Even the swipe of a touch screen does not help with any oppositional grasp, resistance or prehension.

Other factors come into play that affect our children's' hand function. Young children longer complete as much physical big body activities as children did 20 years ago. These "big body movements" such as riding a bike to school from a young age, walking long distances, monkey bars, climbing trees and rope ladders at the park all build strength and endurance in the body and upper limbs. Nowadays, a visit to the park usually presents a child with more structured equipment and experiences and less of the more unstructured challenging strength and big body movements that help build good hand skills. Our increased safety emphasis in the community and schools, does impact the way in which a young child can load up and use their upper body strength. Climbing up an unstable rope ladder uses a lot of upper body strength and hand strength. Our change in current type of play environments, mean that many children who in the past may have self-remediated their own "slightly at risk" hand strength issues, NOW don't access what their body needs to strengthen themselves. Use of technology, sedentary times in cars and lighter toys **does not work** to promote hand strength and endurance which are some of the pivotal requirements for fine motor skill development in children.

Children are also starting formal schooling earlier than in previous generations and with this has been a societal push for earlier emphasis by all on academic learning as opposed to play. Play is children's work and good quality play environments and situations, promote many learning opportunities for children's bodies, skills and learning. Don't underestimate the power of outdoor play, movement and nature playgrounds for children's upper body strength.

Many children start kindy already holding their pencils in a certain way and have practiced using a grasp pattern for long enough that they are reluctant to change. Changing and optimizing a young child's pencil grasp is **most effective in the kindy year** and the shift does not take too long when the strategies are effective.

We as parents need to look carefully at our children's hand skills and fine motor skills so they can develop good dexterity. Many children do have good developing skills and they will go on to have good dexterity. Some children, however, need to develop better grasp, strength, pencil control and/ or cutting skills. The most effective strategy is to target this in a specific way, one to one or in a small focused situation. So how well does your child use their hands? Did you know that there is a strong link between fine motor skills and literacy? This link means all we can do to promote better fine motor skills will also assist the neural pathway for literacy as well. Fine motor and language skills are imperative in the kindy and pre-primary years to promote good learning outcomes.

What we do know, is that children whom have well organised, fully integrated movement skills often show increased competence and ease with new learning. Children who have a good understanding of how to use their bodies, and whom can use their hands competently, are also more able to direct their full focus and attention on the cognitive aspect of the task. Children, however, who are still mastering the movement control bit, are not able to fully attend to the cognitive part. For example with writing skills: if you are still trying to work out how to make your pencil go down in a straight line to form a letter l, it is

harder to attend to the letter name and sound and put it together with other sounds to make a word. A competent child who doesn't have to think about how to form a letter l, can use all their attention to work out the sounds and which order they go in, to write "like". Getting all the mechanical aspects sorted and proficient helps the focus be on the literacy and academic part. We need to focus on this first from kindy through to year 1 or 2 so they aren't only focussing on the motor action.

The other aspect is in relation to **endurance**. Children who have well developed fine motor skills do not have difficulty finishing their work and using their muscles with ease. Children whose fine motor skills are not as well developed often have difficulty with the endurance aspect of the task, they tire easily, or attempt a bit and then get bored or disinterested in completing the task. They may need a lot of encouragement to finish or have an adult to assist them. In some cases, they may even avoid fine motor tasks in favour of other activities. This in itself means they don't practice the skills they need to develop automatic control for school. The muscles of the hands need to develop the endurance used for writing and typing and this comes from fine motor jobs such as colouring, cutting dot to dots and fine prehension tasks.

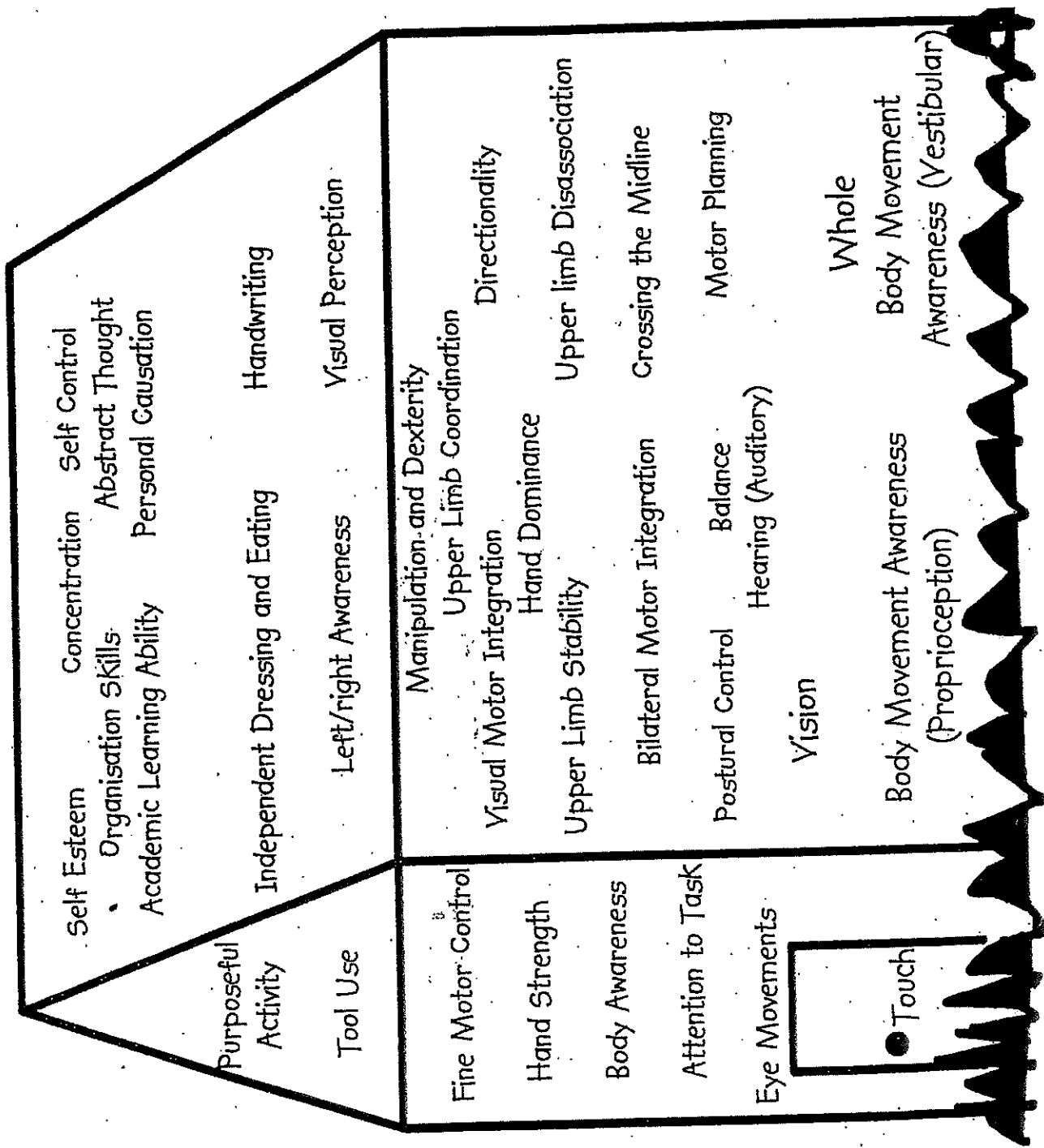
The job for a school is to engage your child in group learning situations that encompass all areas of their development. This is accomplished with care and thoughtful planning so that activities are presented that build the skills that children need to practice. However, they are not always learned solely in a group setting. In fact, many children who need a little more encouragement, are far more successful when their skills can be developed and consolidated on a one to one situation at home. Its rather like a football player who practices his kicks between games, or a person learning a musical instrument who needs regular home practice as well as the music lesson. Not all children need to same home support but if your child does need some extra fine motor practice - overwhelmingly the evidence points to the best time for this to happen - is in the kindy and pre-primary years. Early upskilling can mean that your child will go on and develop their mindset as a competent learner and capable of mastering skills. Parents have a vital role in helping their child set up good learning foundations and working as a team.

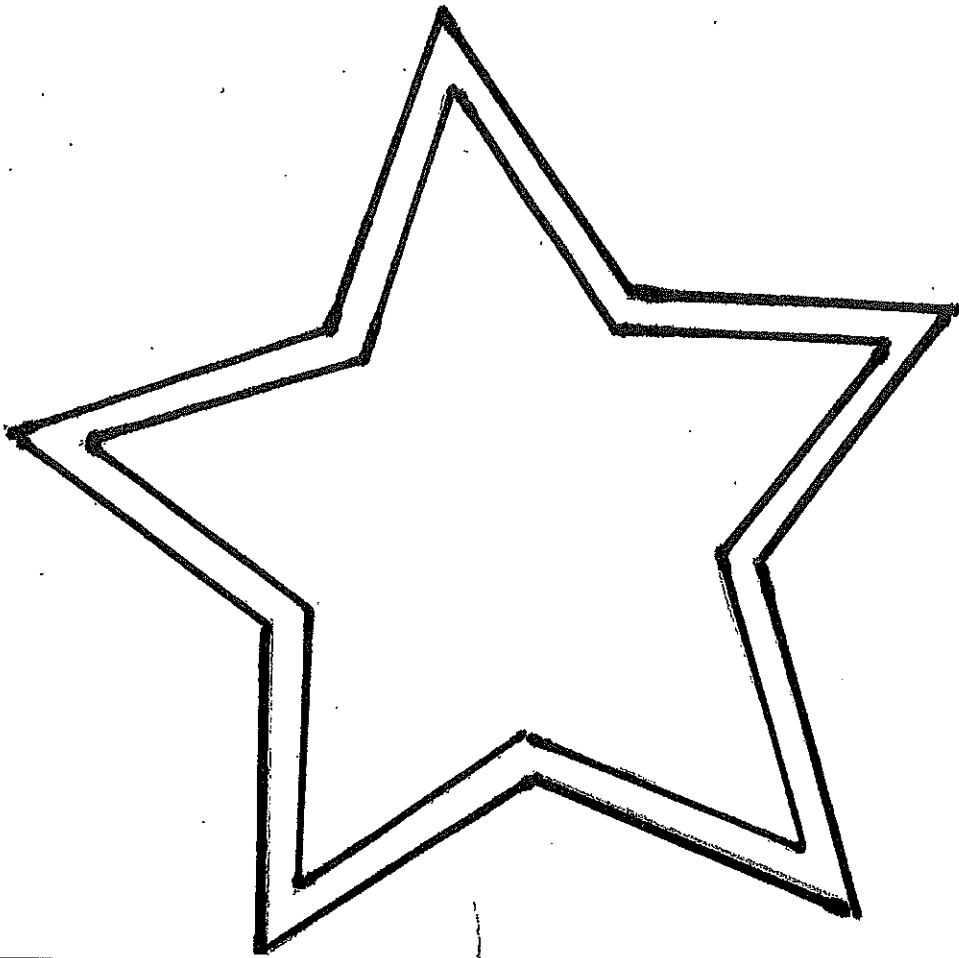
Fine motor skills are life skills not just writing skills. They are a pivotal foundation learning goal in the early years.

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# OCCUPATIONAL THERAPY





Handwriting practice lines consisting of multiple rows of solid top and bottom lines with a dashed midline for letter height guidance.

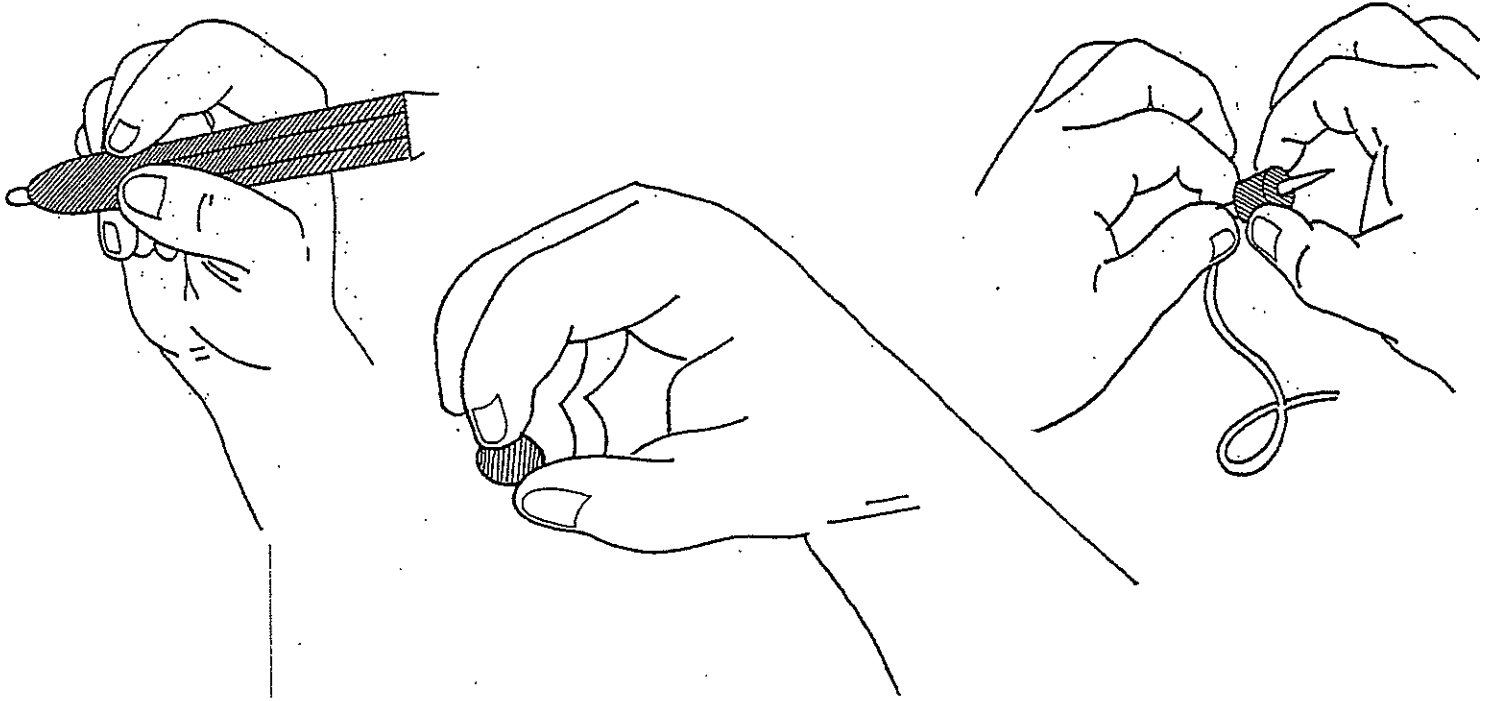
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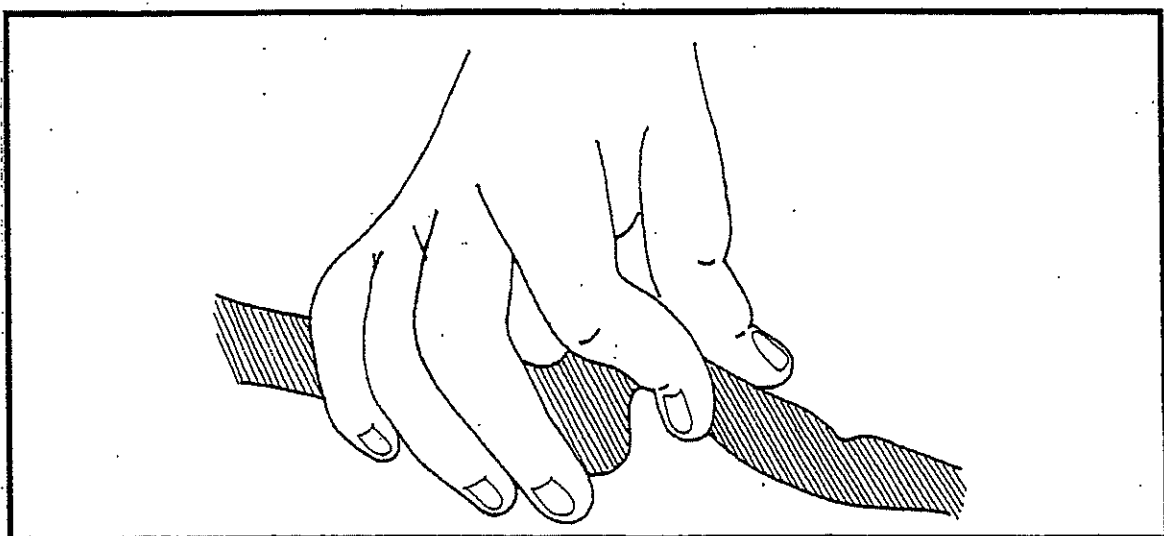
**Correct pincer grasp.** Note the 'c' shape between the thumb and the index finger and the roundness of the fingers.

The pincer grasp is essential for the development of:

- A good pencil grip and pencil control
- Fast reliable handling of small objects e.g. buttons, coins etc.



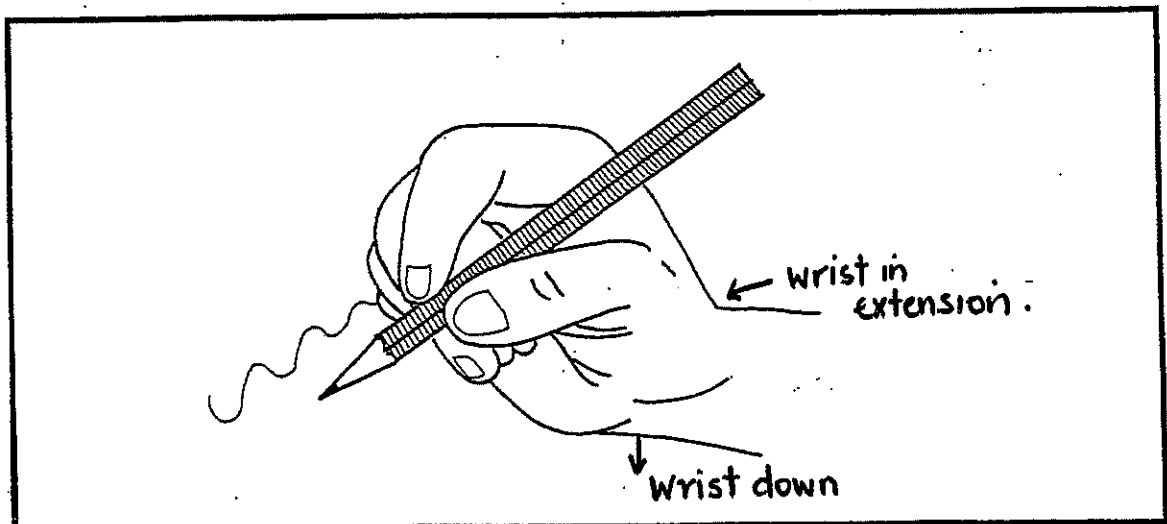
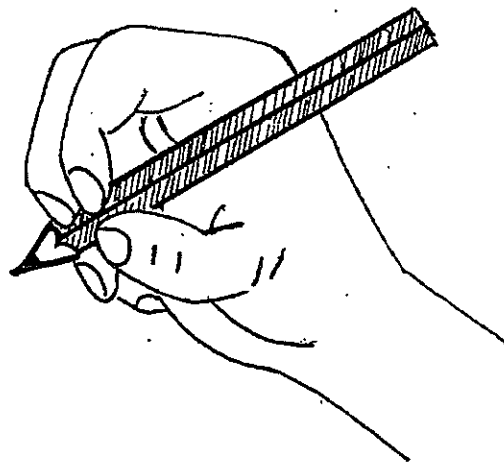
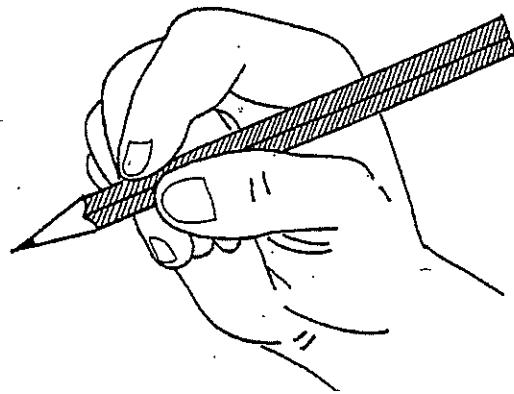
**Incorrect pincer grasp.** Note the collapse of the web space and the hyperextension of the finger joints.



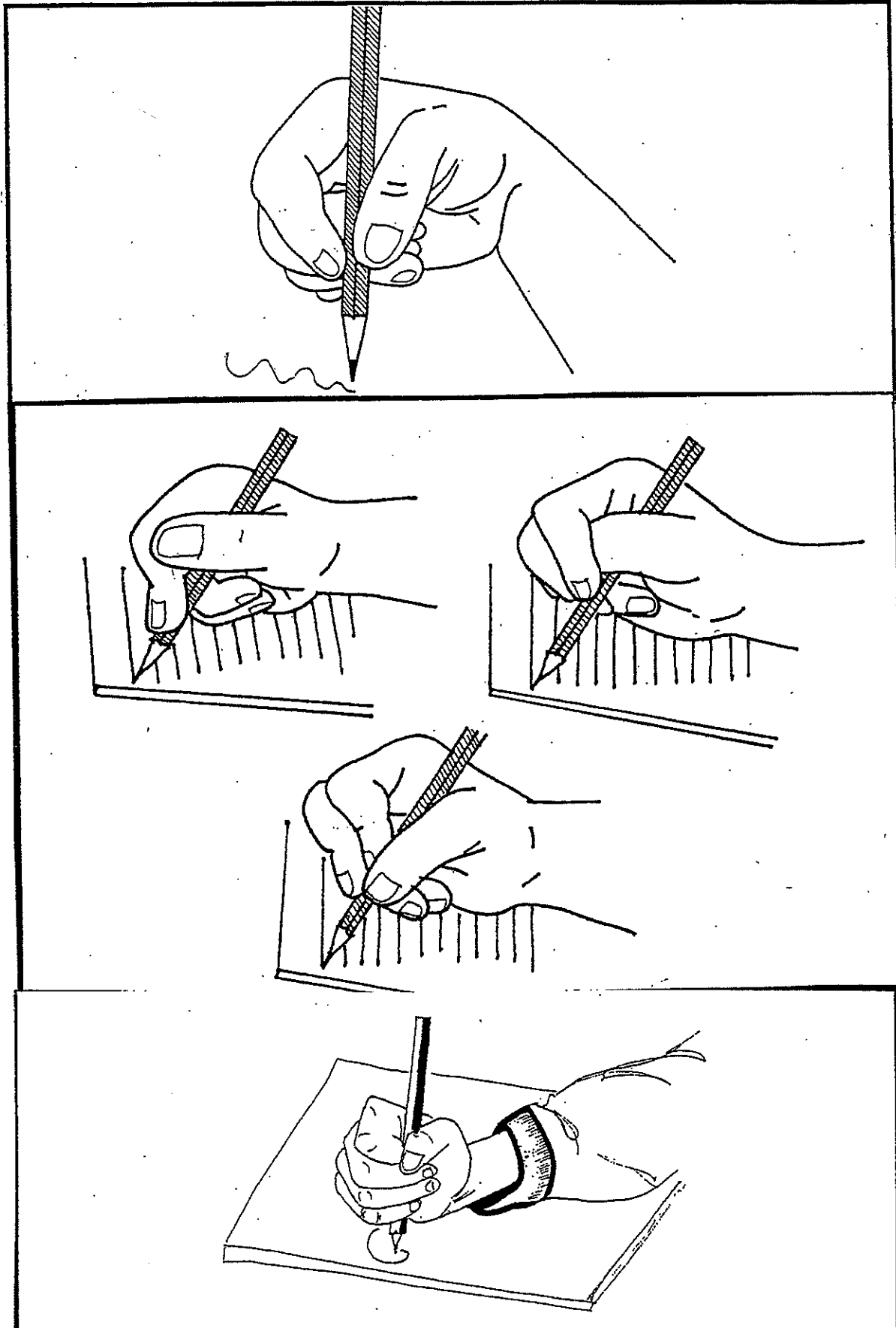
**Correct pencil grasps.** Note the hand should be curled and resting on the table not up in the air or with a wrist that makes a "bridge".

The grasp that should be encouraged for both Left and Right handers, uses the thumb, index and middle fingers in one of the following ways:

1. having the thumb and index finger pinch whilst the pencil rests on the middle finger
2. having the thumb and middle finger pinch and the index finger resting on top of the pencil
3. Having the thumb, index and middle fingers share the task equally.

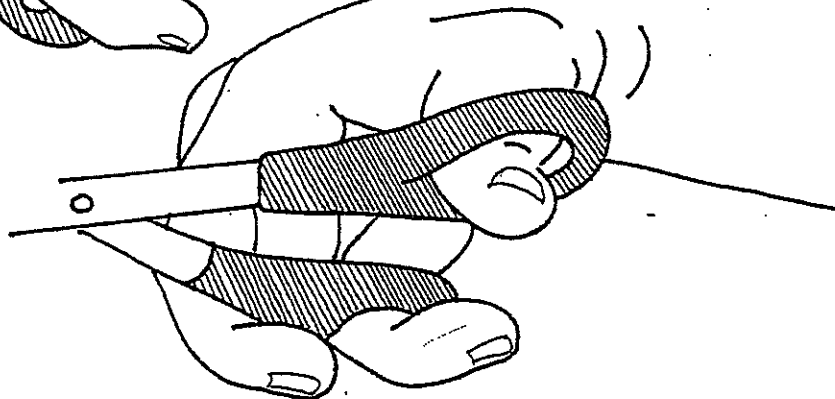
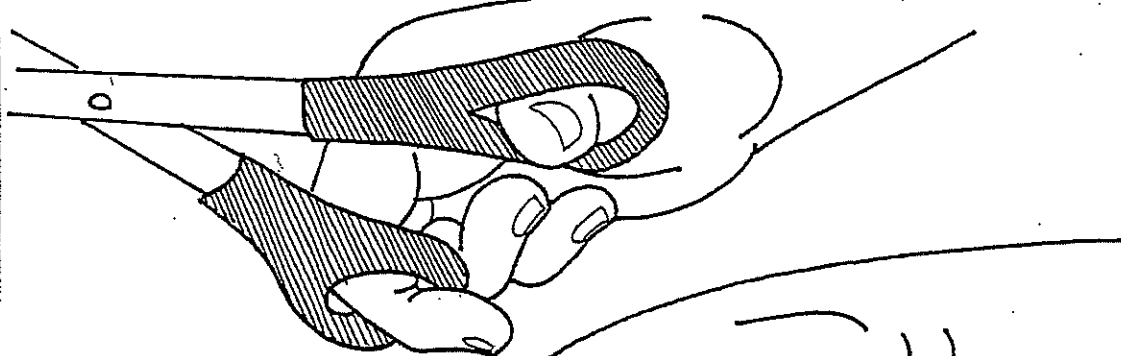
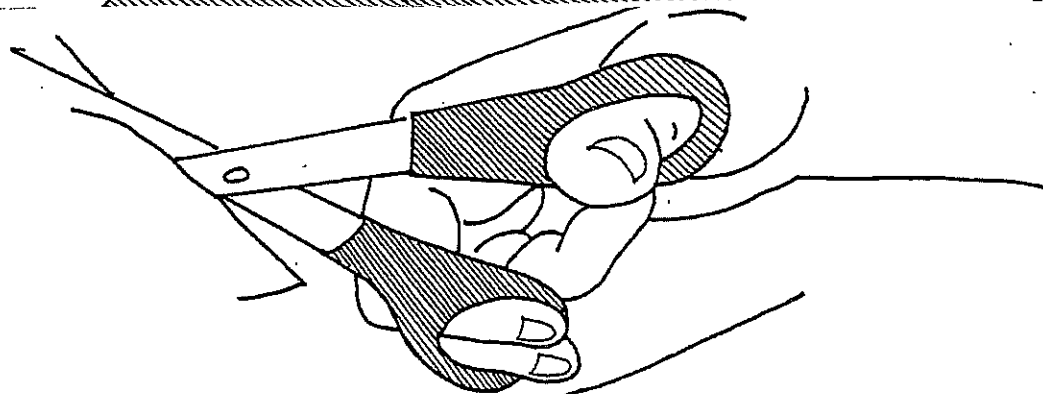
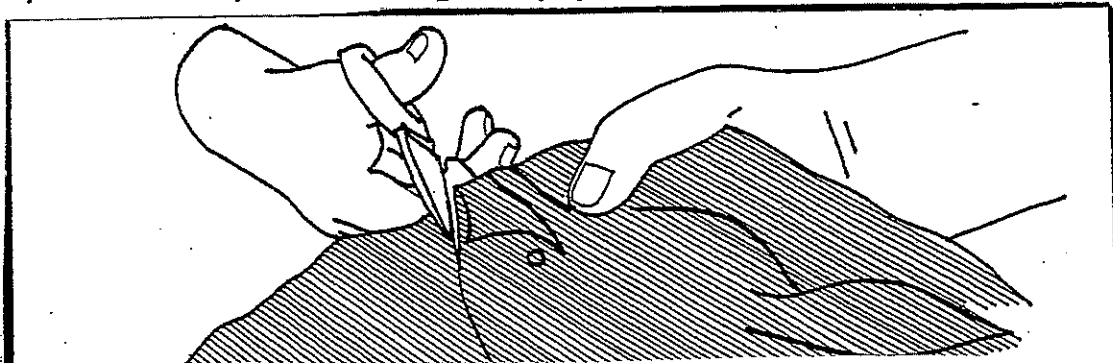


**Incorrect pencil grasps.** Note these are immature patterns for this age. Frequently these grasps occur in young children if they have weaker hand skills or difficulty controlling their pencil. Often if the pencil is too skinny it prolongs the use of immature grasps. If we can support and adjust their grasp before it becomes an ingrained habit, it will positively impact on their writing for many years to come and throughout their schooling.





Correct scissor grasps. Note the helper hand thumb should be "up" when they are holding the paper.



Some **incorrect scissor grasps** include:

- Holding and operating the scissors with 2 hands
- Grasping the scissors with the whole hand, without putting the fingers or thumb in the loops
- Putting the index and middle fingers in the loops, without using the thumb
- Placing the fingers and thumbs too far into the loops

## Parent information on

# In-hand manipulation skills

## Description

The term in-hand manipulation refers to the movement of objects within or by the hand. In-hand manipulation skills are required for handwriting, tool use (e.g. scissors), dressing, eating, and constructive play. Signs of poor in-hand manipulation include frequent dropping of objects, using two hands to complete activities that normally only require one hand, and slow fine motor task completion. In such cases, it is important that the muscles of the hand are strengthened through the repetitive practice of activities that require the in-hand manipulation skills of translation, shift and rotation.

## Translation

Translation refers to the movement of objects between the fingers and palm of the hand. The two types of translation are therefore finger-to-palm and palm-to-finger. Think of how you manipulate money at a coin vending machine, and when picking up lots of coins from a table to collect in one hand and this is the movement plan of translation.

### **Activity ideas to develop translation:**

- ✎ *Vending machines / parking meters:* starting with a handful of coins, get your child to wriggle and push the coins forward to their "pinching fingers" one at a time.
- ✎ *Purse:* periodically ask your child to dig out the 5c coins from your wallet or purse, collecting several in the palm of their hand. Then...
- ✎ *Piggy bank:* ask them to transfer the 5c pieces into a piggy bank, one at a time.
- ✎ *Necklaces:* thread beads, buttons or fruit loops onto a piece of string, starting with several items in the palm of the hand.
- ✎ *Board games:* such as Connect 4 or Checkers, which require the child to move a counter from the palm of their hand to their finger tips for placement.
- ✎ *Constructive play:* moving blocks, lego etc from the palm to the fingers and vice versa.

## Shift

Shift involves the adjustment of an object in the hand after it has already been grasped. This is an important skill in the use and adjustment of pencils, scissor skills, cutlery, bead threading and many functional day to day tasks, eg opening a slide phone.

### **Activity ideas to develop shift:**

- ✎ *Pencils:* creeping the fingers and thumb up and down a pencil before starting a drawing or writing activity.
- ✎ *Cards:* fanning playing cards in the hand by sliding the thumb across the fingers.

👉 *Finger games:* Learning how to drum fingers on a table top, clicking fingers, finger actions and rhymes such as “here is the church and here are the people”, knitting, threading, Cat’s cradle and holding a superball or tennis ball in your hand and rotating it with just the one hand.

👉 *Tricky fingers:* this is a game that is commercially available and great for dexterity.

👉 *Musical Instruments:* playing the piano, saxophone, flute, guitar or the recorder all use shift.

👉 *Hobbies - Kites:* holding the string to let in or out, Fishing: with a hand line.



## Rotation

Rotation occurs when an object is turned in or by the hand. For example when you pick up a pen at the wrong end and you turn it around in your hand so the nib is the correct way.

### **Activity ideas to develop rotation:**

👉 *Jars:* unscrewing and re-screwing jar lids.

👉 *Nuts and bolts:* have races to see how many they can screw on and off in a given period of time.

👉 *Twist ties:* undoing and re-tying the twist ties on bread and other food packets.

👉 *Pipe cleaners:* creating shapes, animals or bubble-blowers

👉 *Pencils:* using a pencil with an eraser on the end, so that your child needs to rotate the pencil in their end to alternate between the writing and erasing ends. Play helicopters with a pencil to warm up before writing (see below).

👉 *Spinning tops:* spin in an outward direction using the index (or middle) finger and thumb.

👉 *Finger games:* teaching them to twiddle a paper clip, eraser or small object, holding a baton and twisting it like a helicopter blade.

## Strategies to use during activities

*You can use the prompt, “wriggle, wriggle and push” during translation activities.*

*Using differently textured objects in in-hand manipulation activities gives your child greater sensory input, and this helps them to develop their fine motor skills. Different textures also make a difficult task more fun.*

*Likewise, use heavier objects to start off with, as they are easier to manipulate and gives your child greater sensory feedback.*

*If your child persists with using both hands to manipulate an object, get them to hold onto something else with their non-dominant hand (e.g. ask them to hold onto the piggy bank with their “helper hand” while their “boss hand” wriggle and pushes a handful of coins into it). Alternatively, you can hold their non-dominant hand so they can’t use this hand to help.*