

Independent Milestones

In Hand Manipulation in Children.

A BRIEF INTRODUCTION

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What are In Hand Manipulation Skills?

In-hand manipulation is the ability to hold and move an object within one hand. In-hand manipulation skills are essential to the handwriting process because they allow the student to move the pencil from the palm to the fingers, make needed adjustments to the pencil for writing, and turn the pencil from writing to erasing with one hand.

In-hand manipulation skills are divided into three major categories: **translation, shift, and rotation**. All categories may include “stabilization” which is the ability to hold objects with the ring and pinky fingers while moving an object with the thumb, index and middle fingers.

Translation is the ability to move objects from the fingertips to the palm or the palm to the fingertips such as moving coins from the palm to the fingertips to place in vending machine or picking up pennies and moving them from the fingertips to the palm.



Shift is the ability to move an object in a linear manner with the fingertips, such as repositioning the pencil in the fingers to position for writing or fanning playing cards in the hand.



Rotation is the ability to turn an object around in the pads of the fingers and thumb (simple rotation) or turning an object from end to end (complex rotation) such as flipping a pencil from writing end to eraser.

SIMPLE ROTATION



COMPLEX ROTATION



In Hand Manipulation Skills by Age

PALM-TO-FINGER TRANSLATION:

2-2.5 years: Children begin to develop the ability to move objects from their palm to their fingertips. This skill is evident in activities such as moving a small object (e.g., a coin) from the palm to the fingertips to place it into a container.

FINGER-TO-PALM TRANSLATION:

1.5-2 years: This skill develops earlier than palm-to-finger translation. Children start moving objects from their fingertips to their palm, such as picking up a small object and hiding it in their hand.

SHIFT:

3-4 years: The ability to move an object linearly along the fingers or hand surfaces, such as adjusting the position of a pencil in the hand or shifting the pages of a book, begins to emerge.

SIMPLE ROTATION:

2-2.5 years: Children start to rotate objects in their hand using their fingers. Simple rotation involves turning an object 90 degrees or less, like twisting a cap open or rotating a puzzle piece to fit.

COMPLEX ROTATION:

4-6 years: This skill involves rotating an object 180-360 degrees, such as turning a pencil to use the eraser. It requires more precise control and coordination of the fingers.

These skills continue to refine with practice and maturation. Encouraging activities that involve manipulating small objects, such as playing with building blocks, stringing beads, and using tweezers, can help support the development of in-hand manipulation skills in children.



Ideas for Building In-hand Manipulation Skills

- **Towel or Paper Scrunch** - Lay towel flat and scrunch it into a roll using your fingers.
- **Coins** - Hold with thumb, index, and middle finger - turn and flip them over.
- **Chopsticks** - Pick up small objects and walk your fingers up and down.
- **Marbles** - Hide marbles in your hand and roll a chosen colour to your fingertips.
- **Beads/Chains** - Thread beads or link paper clips into a chain.
- **Cotton Swab Paint** - Paint using both ends of a swab, flipping as you go.
- **Hole Punch** - Use a punch to make holes or shapes in paper.
- **Pencil Walk** - Walk your fingers up and down the pencil shaft.
- **Pencil Flips** - Flip the pencil in your hand using only your fingers.

In Hand Manipulation Skills Checklist

MOVING OBJECTS FROM FINGERS → PALM

- Get a coin out of a purse
- Crumple a piece of paper
- Get two or more coins out of a purse, one at a time
- Pick up pegs or paper clips one at a time and hold a few in hand
- Pick up several utensils (e.g., knives, forks, pencils) one at a time
- Pick up three blocks or bottle tops one at a time

MOVING OBJECTS FROM PALM → FINGERS

- Move coin from palm to fingers
- Move object from palm to container
- Hold money and place into bank, money box or machine
- Put one utensil down while holding others

SHIFTING OBJECTS

- Turn pages in a magazine or book
- Pick up sheets of paper or money notes
- Separate playing cards
- Flatten small clay ball between fingers
- String beads (shift string and bead)
- Shift pen/pencil for writing position
- Shift paper while cutting
- Fasten/loosen buttons
- Adjust food (sandwich, fruit, biscuit) while eating
- Adjust cutlery for use
- Rub paint/dirt/tape off finger pad
- Hold pen and push top off with same hand
- Hold fabric while fastening button/press stud
- Hold key ring and shift correct key to lock

MOVING OBJECTS AROUND

- Remove/put on small jar lid
- Put on/remove bolts from nuts
- Rotate pencil tip to left
- Rotate pencil tip to right
- Remove pen from case and prepare to write
- Rotate pen/marker to replace cap
- Rotate puzzle piece for placement
- Feel shapes/objects to identify them
- Do construction or building activities
- Hold key ring and rotate key into lock

BILATERAL HAND FUNCTION ACTIVITIES

- Tie shoelaces
- Style hair
- Use tools (e.g., screwdriver)
- Do craft tasks (knitting, sewing, woodwork, leatherwork, cooking)