FINE MOTOR SKILL DEVELOPMENT

In Children With Down Syndrome

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ALWAYS BUILD ON OUR STRENGTHS

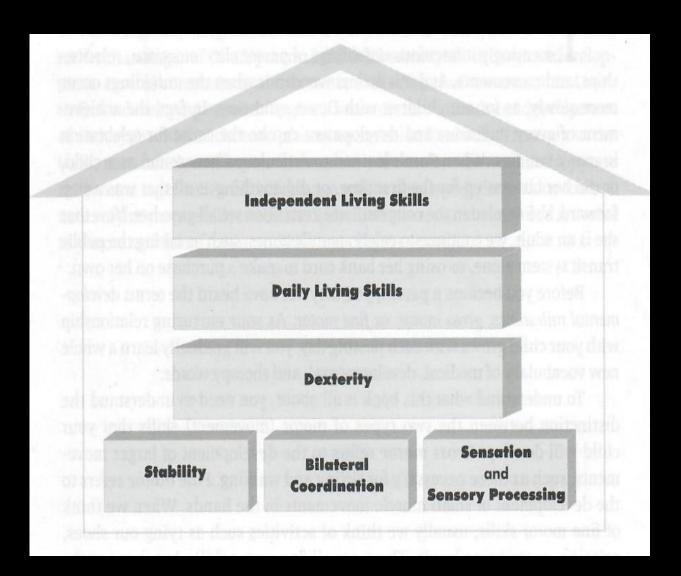
My child CAN...

So, now we WILL...

DEAR FUTURE
MOM...DAD...BROTHER...SISTER...GRANDMA...
GRANDPA...AUNT...UNCLE...FRIEND

https://www.youtube.com/watch?v=Ju-q4OnBtNU

THE FINE MOTOR SKILLS "HOUSE" MODEL



FIRST LEVEL OF THE FINE MOTOR "HOUSE" BUILDING BLOCKS



Stability

Proximal stability leads to distal mobility

 Shoulder, elbow, forearm, wrist, palm, fingers



Bilateral Coordination

Efficient use of both hands during an activity will allow to control and position an object while the other hand can manipulate

 Zipping, opening milk container, cutting, stirring



Sensory Processing

Neurological process of registering, modulating, interpreting, and integrating all the information from our body, so we can respond in an adaptive and functional way

Looking for the adaptive response

Bruni, 2016

SECOND LEVEL OF THE FINE MOTOR "HOUSE"

DEXTERITY

 "Ability to make small, precise, accurate, and efficient movements with our hands without excessive effort." – Bruni, 2016, p. 5

 Using the foundational skills, now able to put it all together!

Task Analysis

THIRD LEVEL OF THE FINE MOTOR "HOUSE" DAILY LIVING SKILLS



School Tasks

Writing, cutting, typing



Self-Help Skills

Dressing, eating, grooming, showering



Household and Leisure Activities

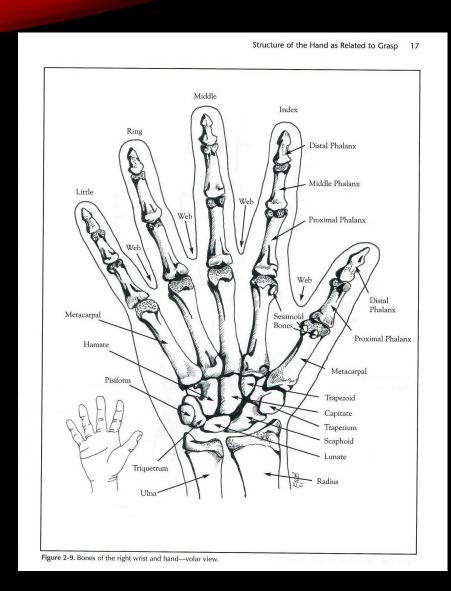
Chores, sports, hobbies

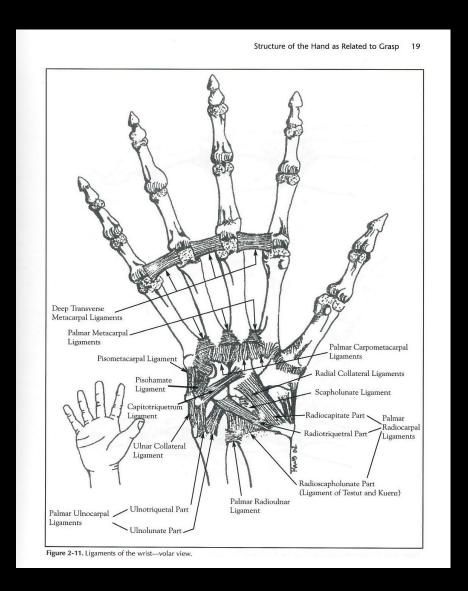
FOURTH LEVEL OF THE FINE MOTOR "HOUSE"

INDEPENDENT LIVING SKILLS

- Tasks we may complete in our lives as an adult
 - Preparing a meal
 - Making a phone call
 - Grocery shopping
 - Doing laundry
 - House cleaning

PHYSICAL CHARACTERISTICS OF THE HAND





PHYSICAL CHARACTERISTICS OF THE HAND & CONSIDERATIONS FOR A CHILD WITH DOWN SYNDROME

- Hypotonia low muscle tone in tongue, face, arms, torso, fingers
- Ligament and Joint Laxity ligaments supporting joints are looser, increases the risk of subluxation or dislocation
 - Atlanto-Axial Instability first and second vertebrae of the spine are unstable due to lax ligaments
 - Estimated that 10-30% of children with Down syndrome have this instability
 - only 1 2% develop symptoms pg 27
- Shorter Limbs this is common, may see challenges with learning to sit down, completing toilet hygiene, buying clothing

PHYSICAL CHARACTERISTICS OF THE HAND & POSSIBLE CONSIDERATIONS FOR A CHILD WITH DOWN SYNDROME

Single palmar crease

– may have two
creases in the palm
versus three

Smaller hands overall

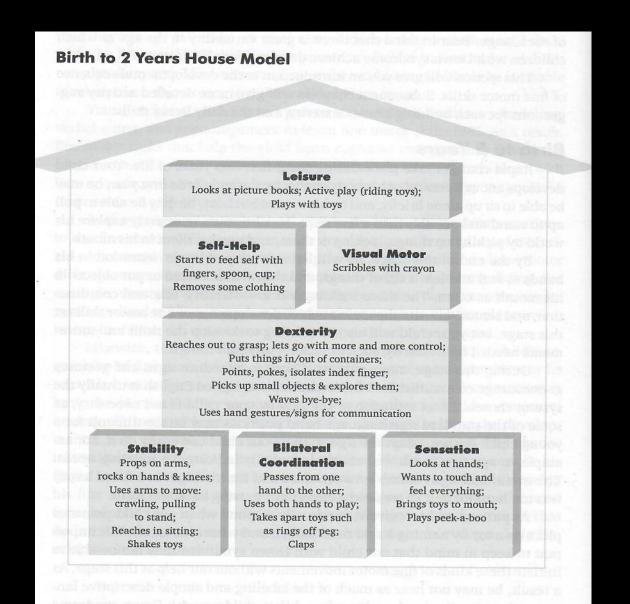
Wrist bones – at birth, may not have all seven wrist bones Curved fifth finger – may make it difficult to stabilize hand on the table during writing, or when using gross grasp to open a lid

There is no indication that this impacts hand function

Are all typically developed by adolescence

Difficulties stabilizing the wrist to allow movement of fingers to learn grasping patterns

FINE MOTOR SKILLS - BIRTH TO 2 YEARS



FINE MOTOR SKILLS - 2 TO 4 YEARS

2 to 4 Years House Model Leisure Playgrounds; Imaginary/dress-up play; Rides toys/trike; Looks at books Self-Help **Visual Motor** Uses a spoon; Draws lines/circles/simple Starts using a fork; forms; Puts cup down without Holds scissors, snips; spilling; Paints with brush; Pulls zipper up and down; Emerging tripod grasp of Takes off/puts on marker loose clothing Dexterity Can let go of small objects more accurately; Develops grasp: from holding in the palm to using fingers; Can pick up small things; Uses thumb and fingers to manipulate; May use signs to augment communication; Points with index finger; Together-apart toys; Uses simple apps/computer games **Bilateral** Sensation Stability Plays with sensory Coordination Uses arms for climbing materials (play dough, sand); Hand preference begins to (onto furniture, at Knows several body parts; emerge; playgrounds); Puts things in mouth less Plays with push/pull toys Uses hands together to often-explores with manipulate toys; (wagons, carts); hands and eyes

Holds toy steady when

necessary while other hand manipulates

Shovels sand/pours water; Opens cupboards/closets

FINE MOTOR SKILLS - 5 TO 8 YEARS



Leisure

Colors pictures; Plays video games; Sports activities (e.g., swimming, ball, etc.)

Self-Help

Uses fork/spoon well; Pours own drink; Grooming: starts to brush hair/teeth; Undresses/dresses self with some help; Starts to fasten buttons/zippers

Household

Helps with household tasks: clearing table, dusting, sweeping

Visual Motor

Starts to form letters and simple pictures; Cuts lines, tries corners; Uses glue; Tripod grasp of pencil; Prints most or all letters

Dexterity

Opens containers;
Can show individual fingers in turn;
Turns doorknobs;
Releases accurately;
Plays with manipulatives (e.g., Duplo, Lego);
Taps, drags in iPad games

Stability

Throws/catches a ball; Opens and holds doors; Turns skipping rope; Sweeps floor

Bilateral Coordination

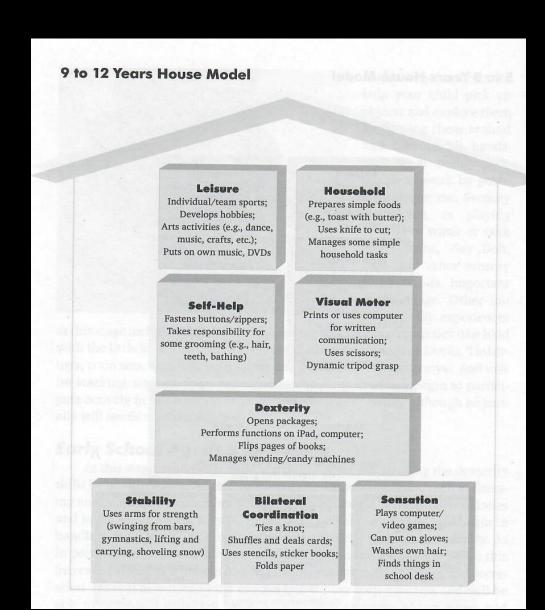
Folds things
(paper, towels);
Dries dishes;
Strings beads;
Sticker books;
Hand dominance evident

Sensation

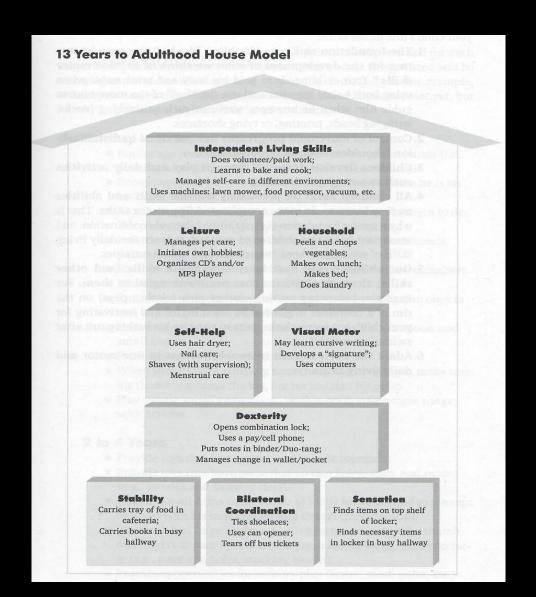
Uses a backpack; Uses a computer mouse; Continues to enjoy sensory play

Bruni, 2016, p. 35

FINE MOTOR SKILLS - 9 TO 12 YEARS



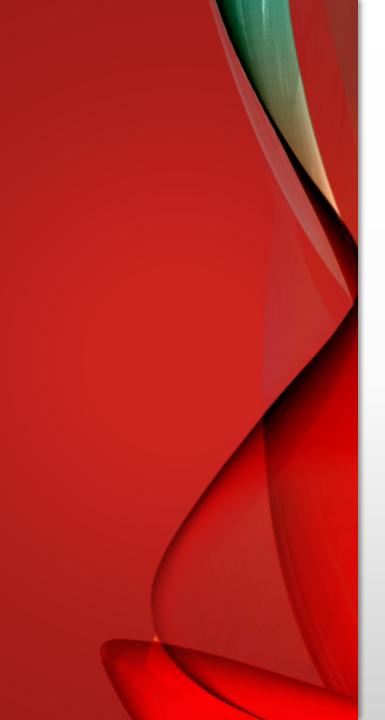
FINE MOTOR SKILLS - 13 TO ADULTHOOD



THINK ABOUT...

Use structured and unstructured play experiences

- Amount of support needed
 - Full, partial, no assistance
- Type of support needed
 - Physical, visual, verbal, emotional
- Level of interest and engagement by the child
 - Uninterested, limited, attentive, motivated, persists at task
- The response to the child's learning attempts
 - Encouraging, re-directing, adjusting, ending task



MOTIVATION

Motivation is critical for engagement in an activity!

- Have Realistic Expectations
- Build on Success
- Break Down the Activity into Small Steps
- Make It "Fun"
- Make It Relevant
- Be Aware of the Environment
- Try It!



VHO'S AWESOME:

You're AWESOME!

REFERENCES

- Alexander, R., Boehme, R., & Cupps, B. (1993). Normal development of functional motor skills. San Antonio, TX: Therapy Skill Builders.
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- Edwards, S. J., Buckland, D. J., & McCoy-Powlen, J. D. (2002). Developmental & functional hand grasps. Thorofare, NJ: SLACK Incorporated.