

# FINE MOTOR SKILL DEVELOPMENT

In Children With Down Syndrome

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ALWAYS BUILD ON OUR STRENGTHS

My child CAN...

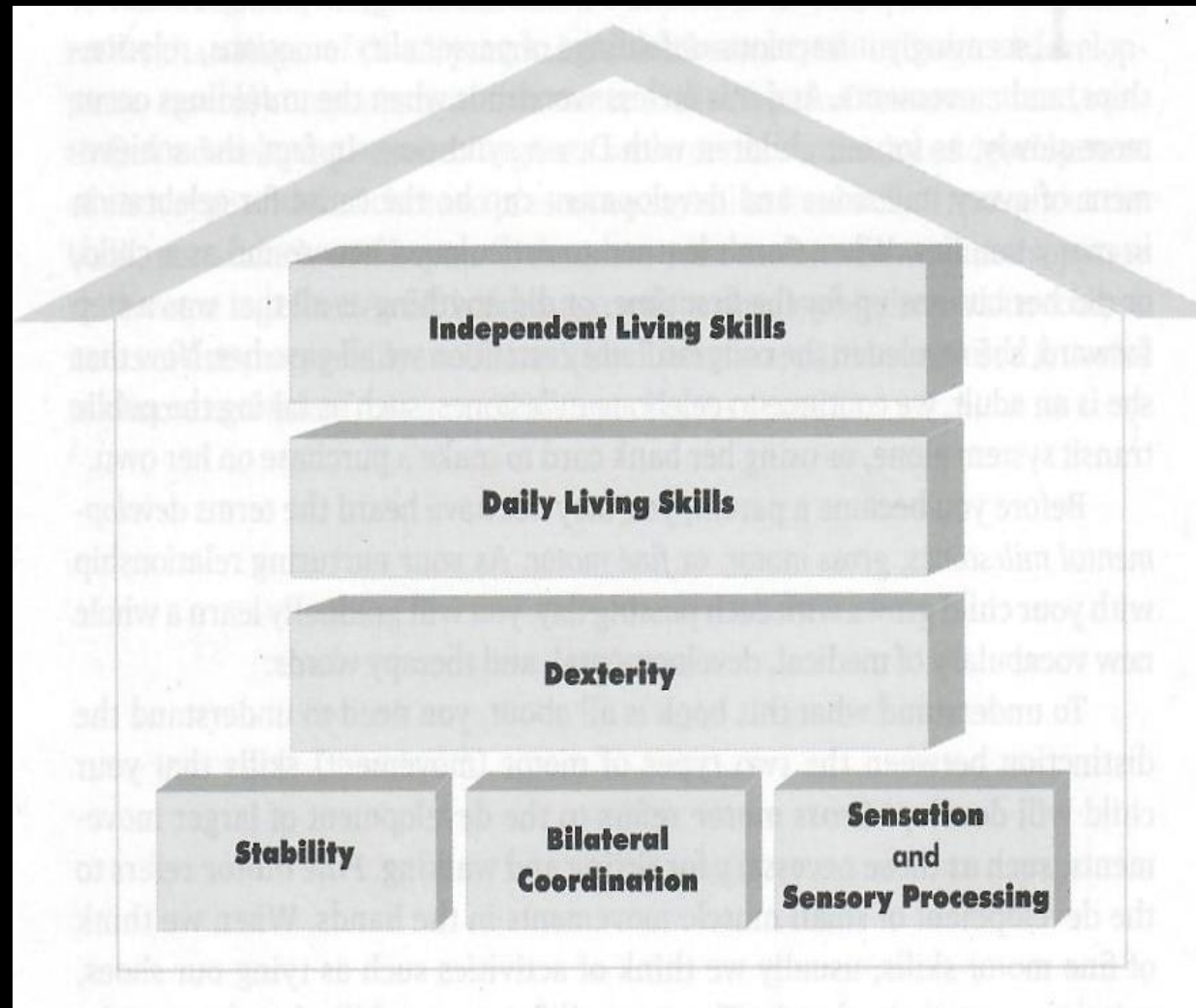
So, now we WILL...



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

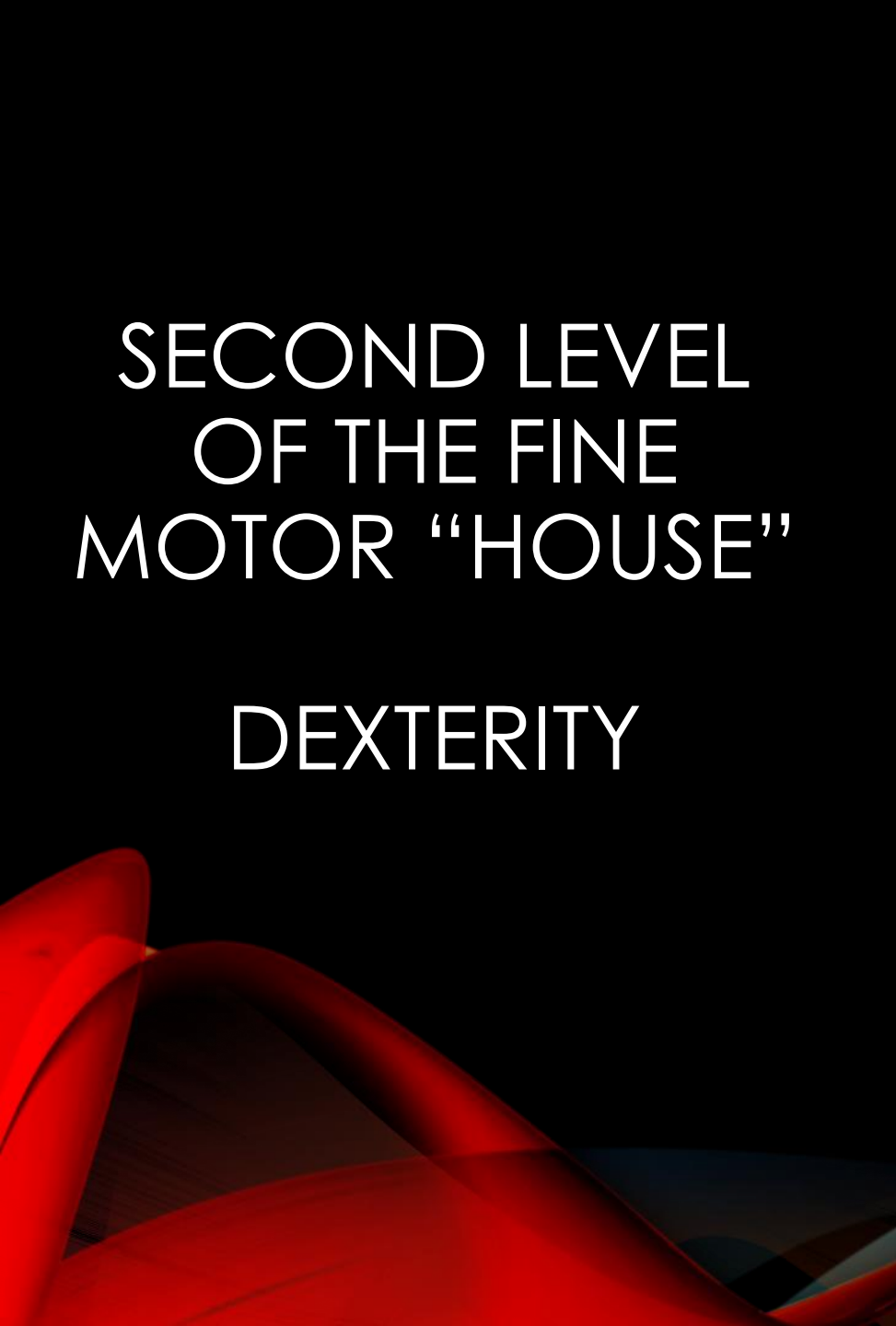
- Zipping, opening milk container, cutting, stirring



## 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



# 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

Structure of the Hand as Related to Grasp 17

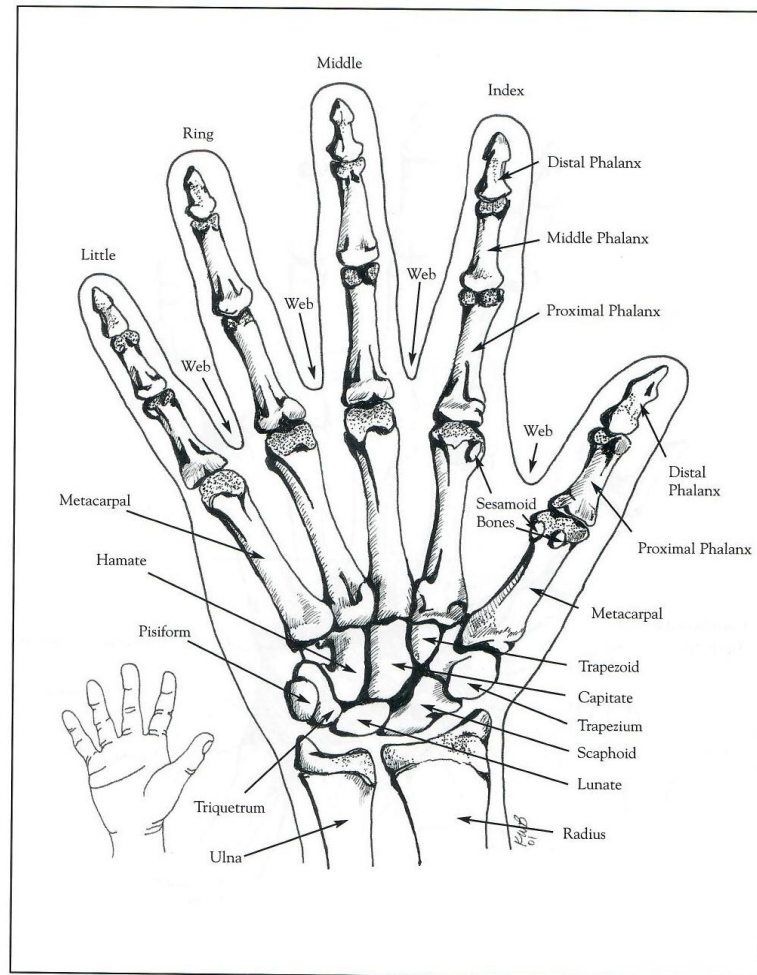


Figure 2-9. Bones of the right wrist and hand—volar view.

Structure of the Hand as Related to Grasp 19

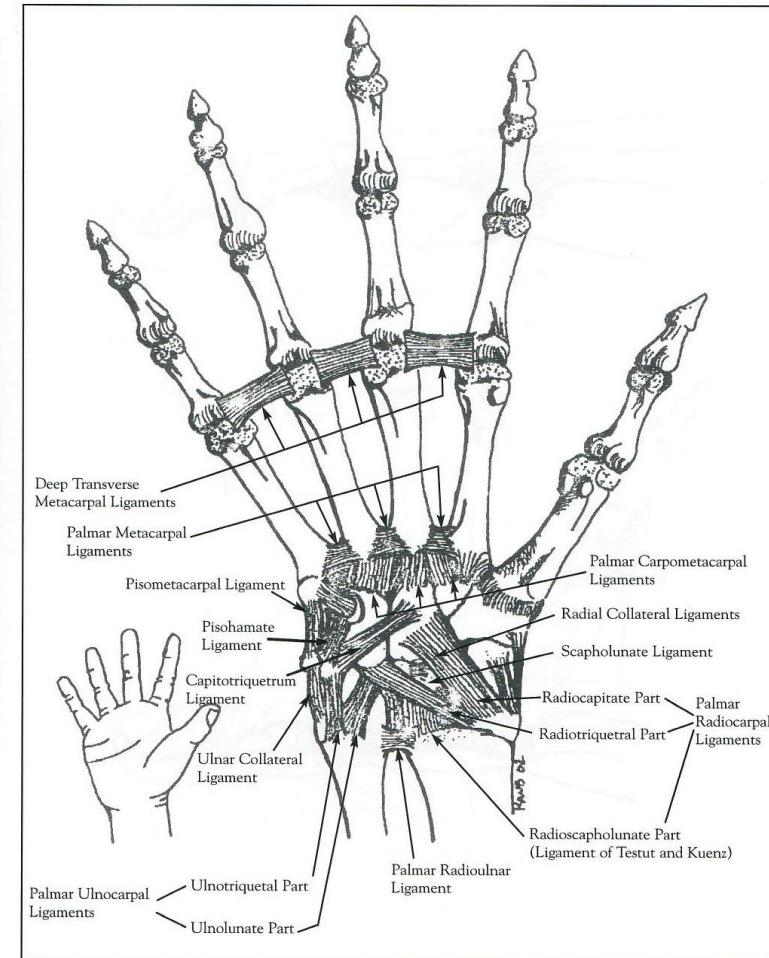


Figure 2-11. Ligaments of the wrist—volar view.

# 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

There is no  
indication that this  
impacts hand  
function

Smaller hands  
overall

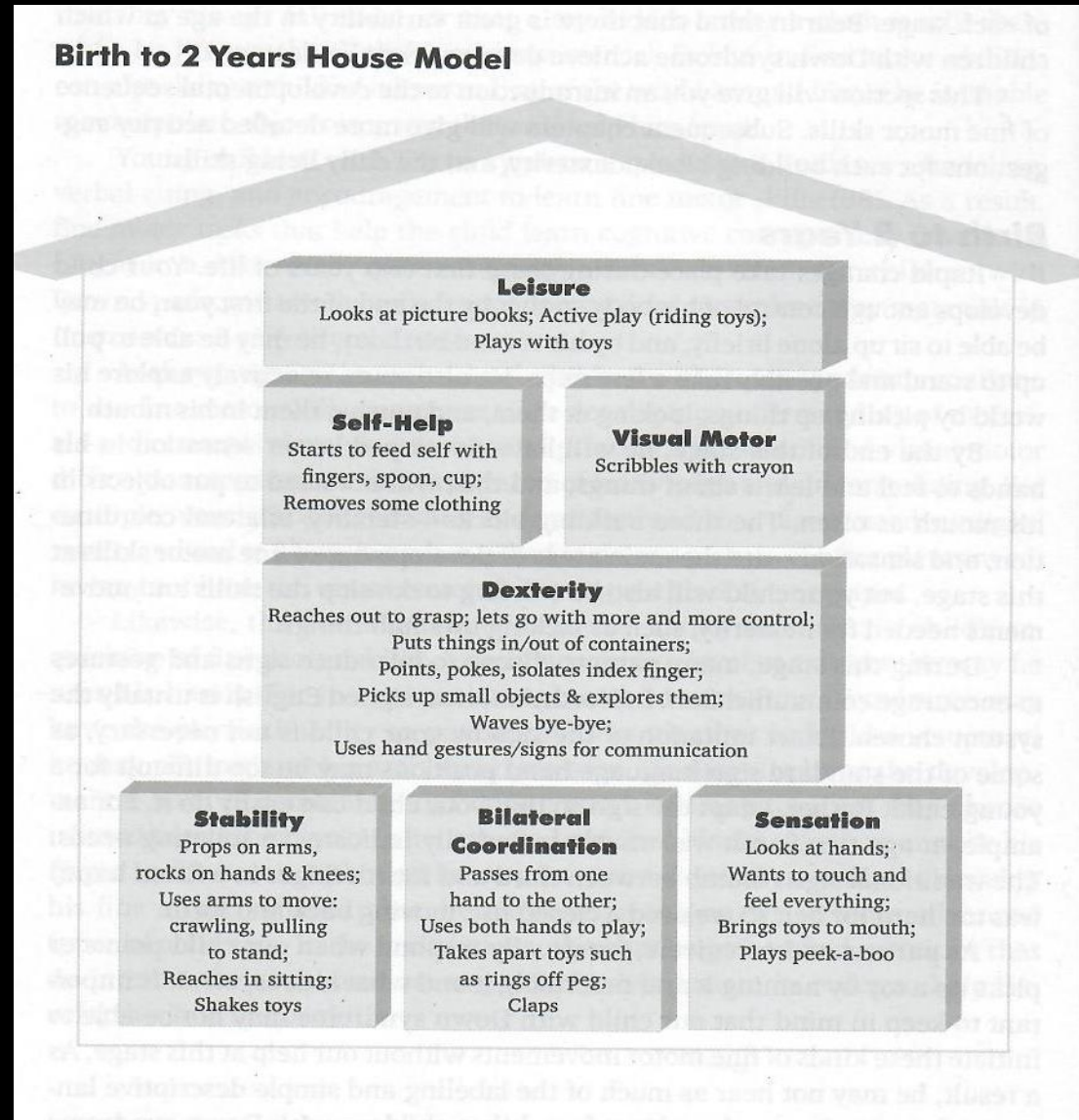
Wrist bones – at birth,  
may not have all  
seven wrist bones

Are all typically  
developed by  
adolescence

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

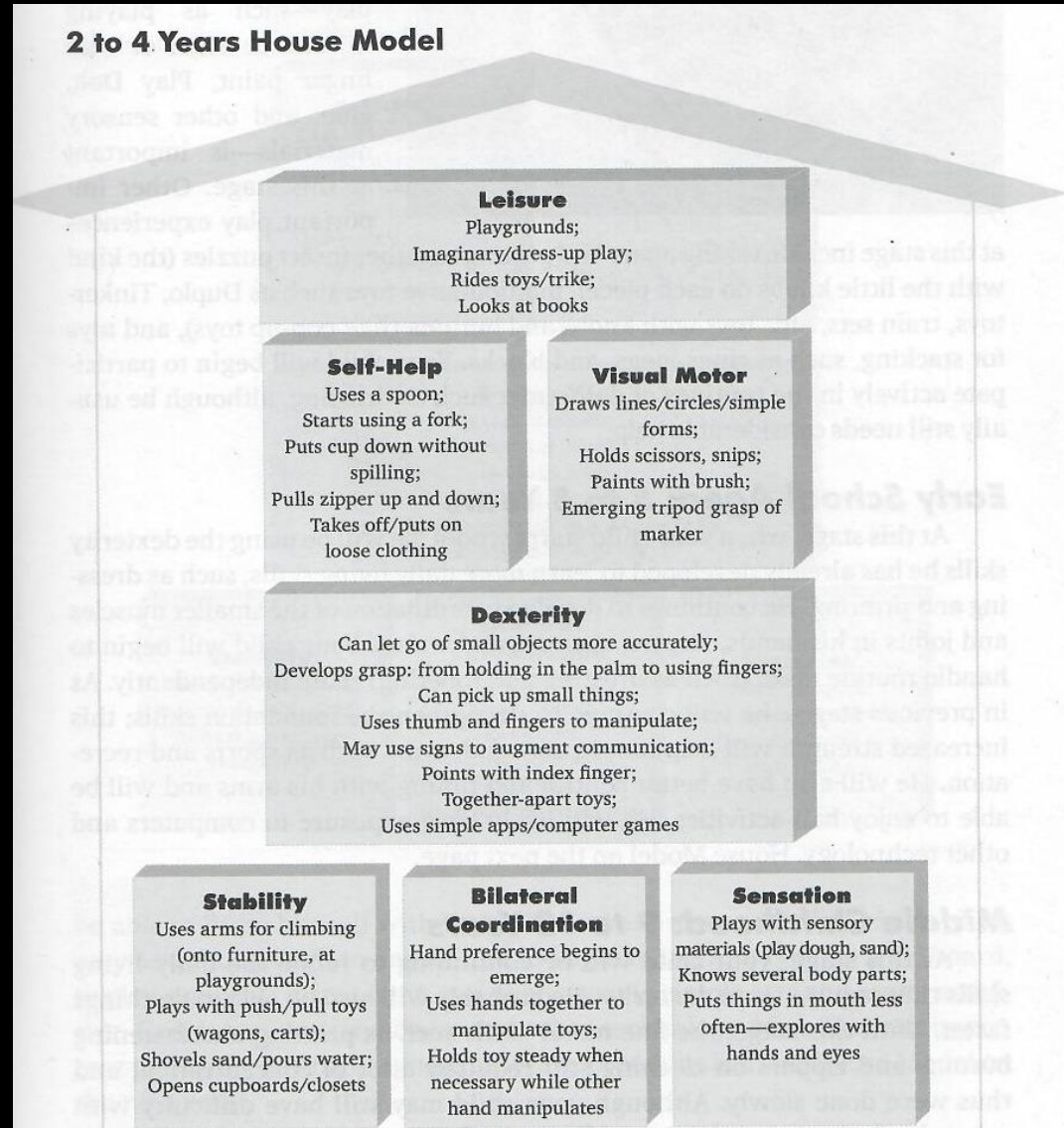
Curved fifth finger – may  
make it difficult to stabilize  
hand on the table during  
writing, or when using gross  
grasp to open a lid

# FINE MOTOR SKILLS - BIRTH TO 2 YEARS

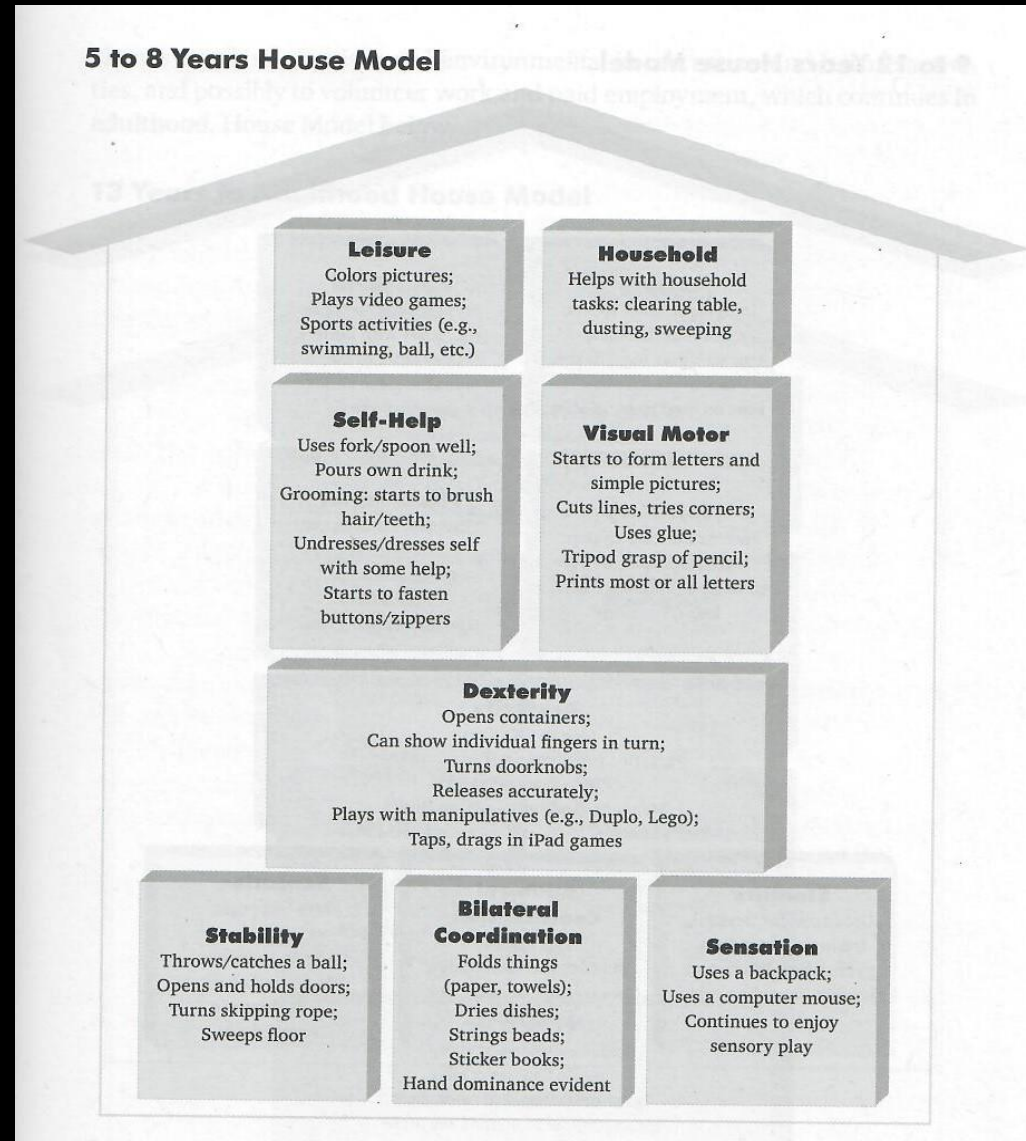




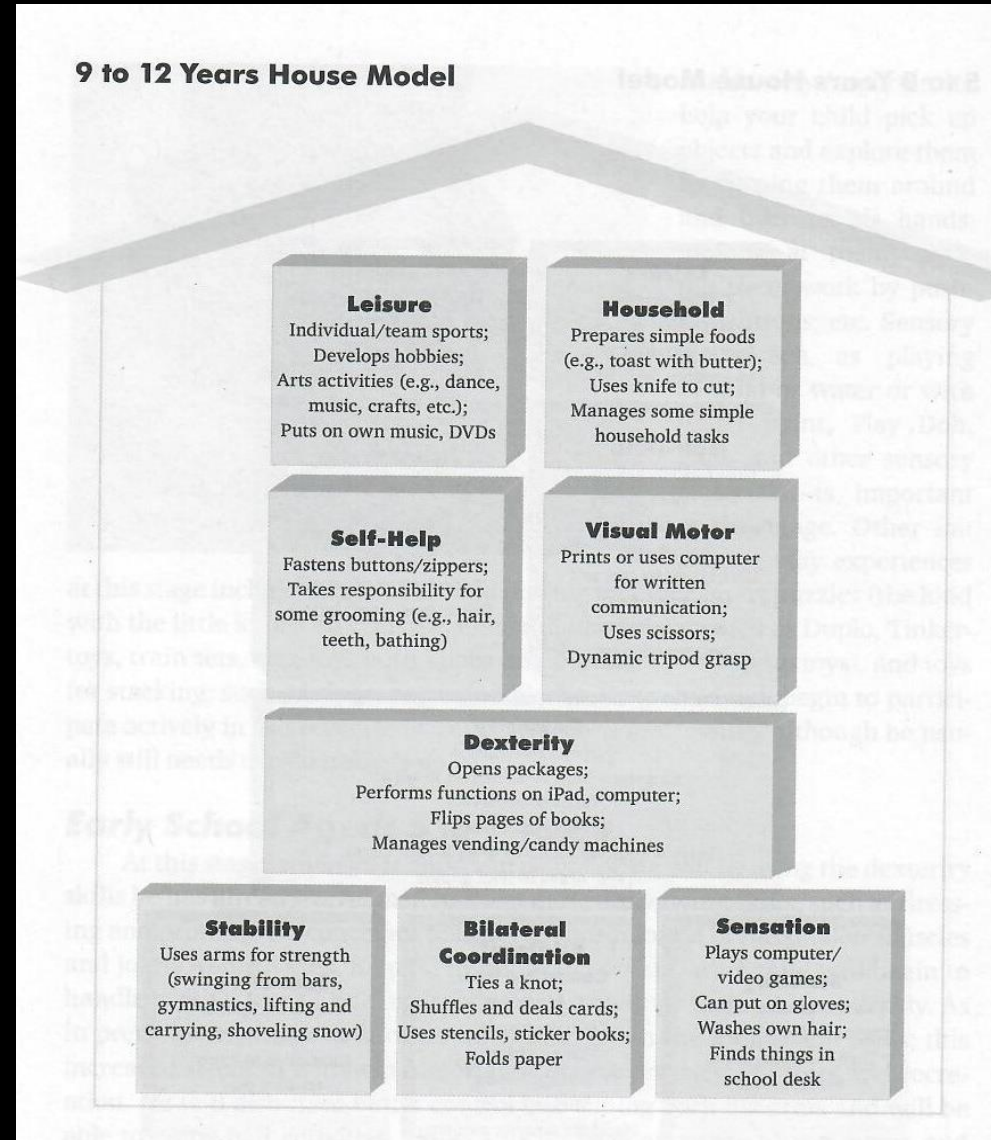
# FINE MOTOR SKILLS - 2 TO 4 YEARS



# FINE MOTOR SKILLS - 5 TO 8 YEARS

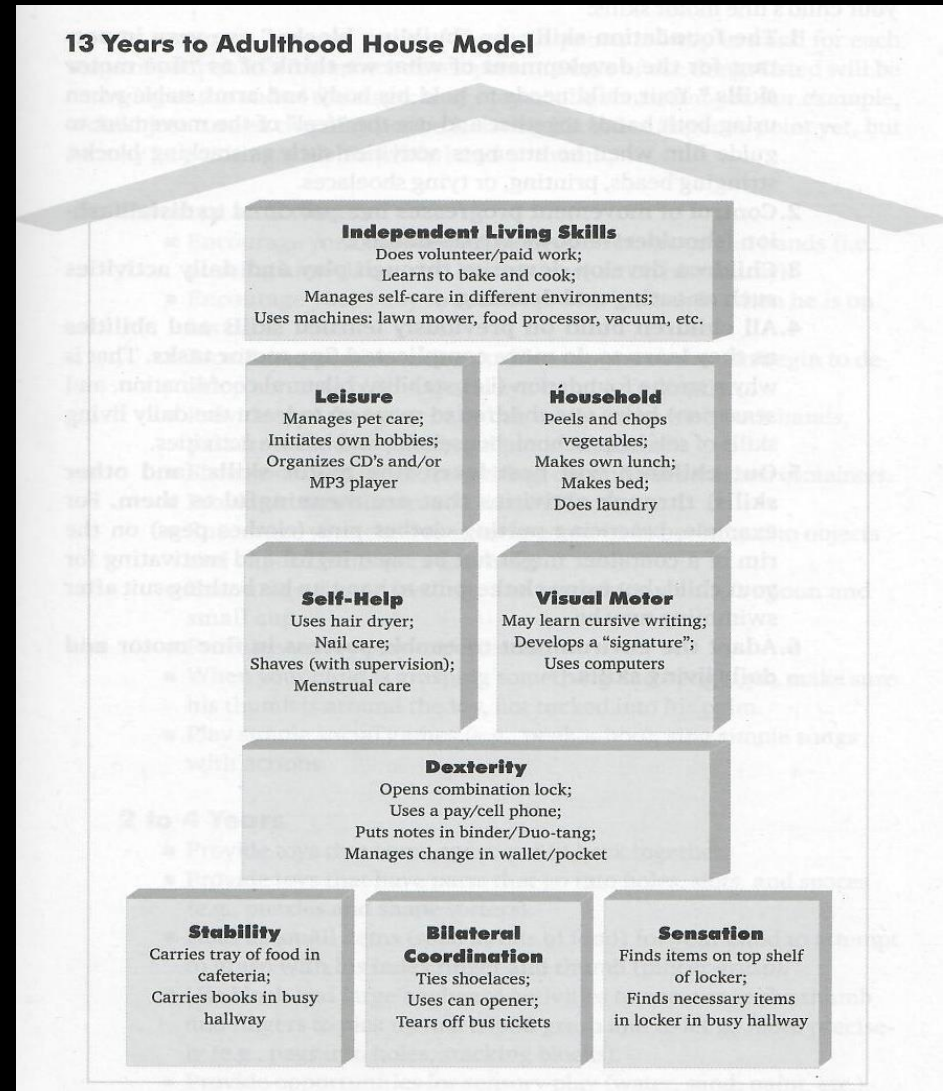


# FINE MOTOR SKILLS - 9 TO 12 YEARS





# 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

An abstract graphic on the left side of the slide, featuring a vibrant red background with flowing, ribbon-like shapes in shades of red and a hint of green at the top.

# 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!



**WHO'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.
- Bruni, M. (2016). *Fine motor skills for children with down syndrome, third edition*. Bethesda, MD: Woodbine House, Inc.
- Edwards, S. J., Buckland, D. J., & McCoy-Powlen, J. D. (2002). *Developmental & functional hand grasps*. Thorofare, NJ: SLACK Incorporated.