

14TH ALLIED HEALTH SCIENTIFIC CONFERENCE 2025

**OPTIMIZING EXECUTIVE FUNCTION IN
AUTISM & ADHD:
A Neuroscience-Based OT Approach**

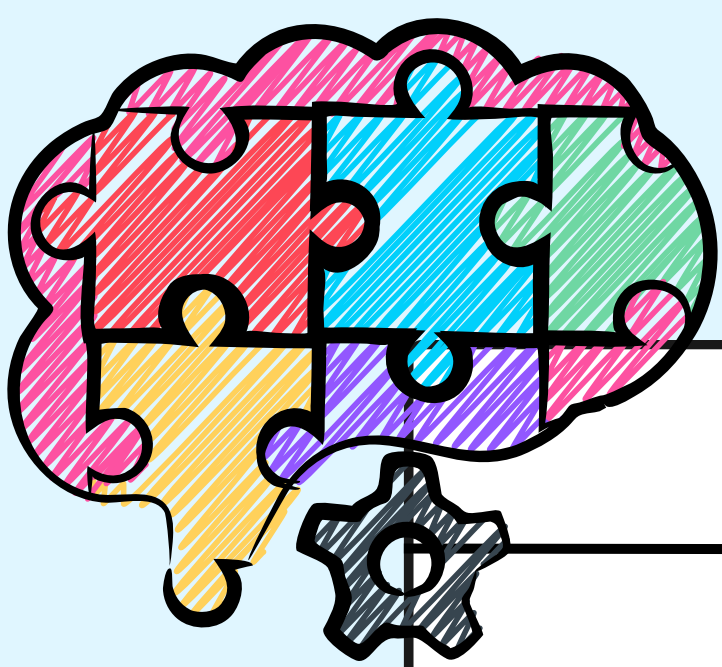
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Occupational Therapist
Pejabat Kesihatan Daerah Kota Setar**



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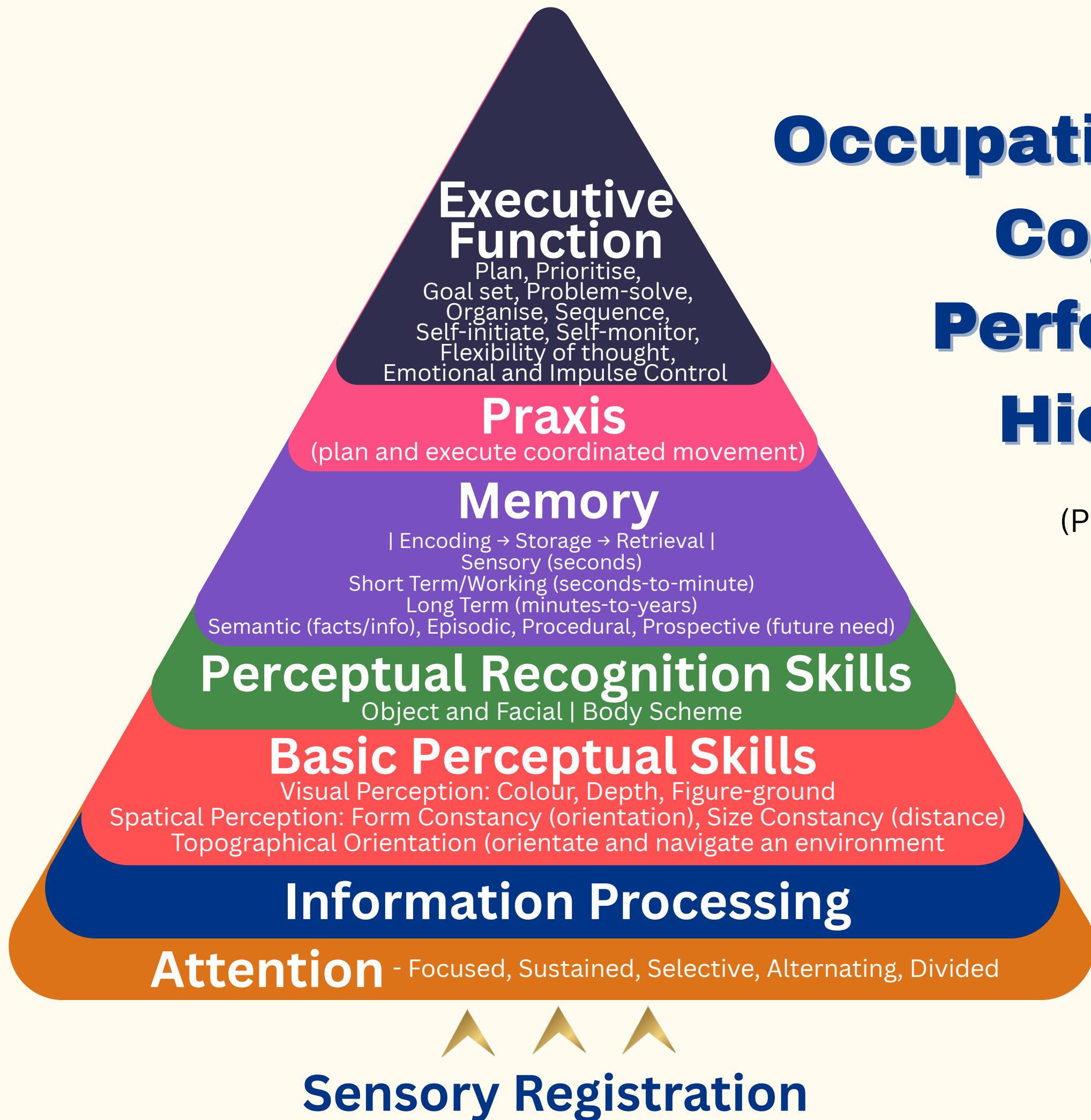




WHAT IS EXECUTIVE FUNCTION?

A multidimensional set of cognitive control processes—including working memory, inhibition, cognitive flexibility, initiation, planning, and goal-directed behavior—that enable individuals to plan, organize, initiate, complete tasks, manage emotions, and adapt flexibly to changing situations.

(Diamond, 2013; Blair, 2016)



Occupational Therapy Cognitive Performance Hierarchy

(Philip D. 2019)



EXECUTIVE FUNCTION SKILLS



Response Inhibition



Working Memory



Emotional Control



Flexibility



Sustained Attention



Task Initiation



Planning/ Prioritizing



**Goal Directed
Persistence**



Organization

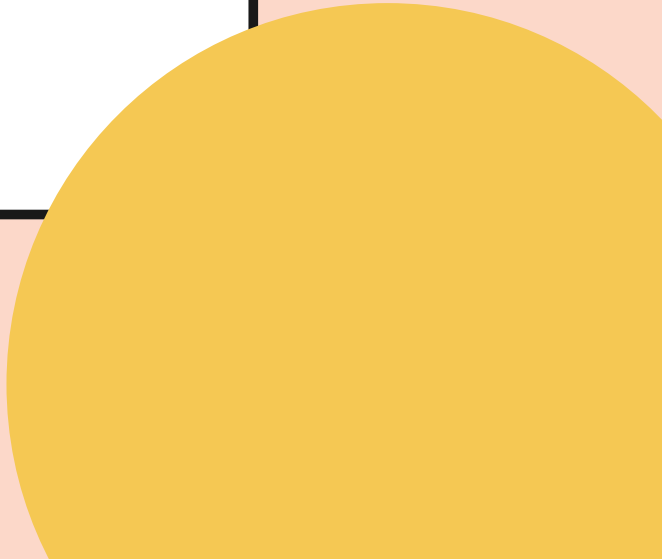
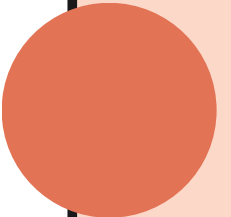


Time Management



IMPORTANCE OF EXECUTIVE FUNCTION?

These skills are crucial for **daily living, learning,** and participating in **meaningful activities.** Occupational therapists address executive functioning challenges by identifying specific difficulties and developing strategies to improve performance in various life roles

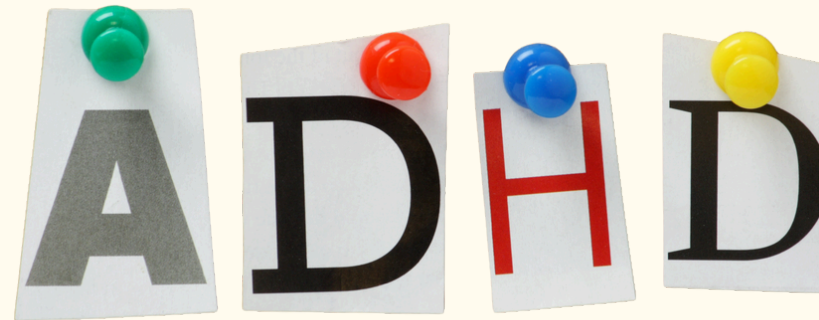


EXECUTIVE FUNCTION IN ASD, ADHD, AND COMORBIDITY



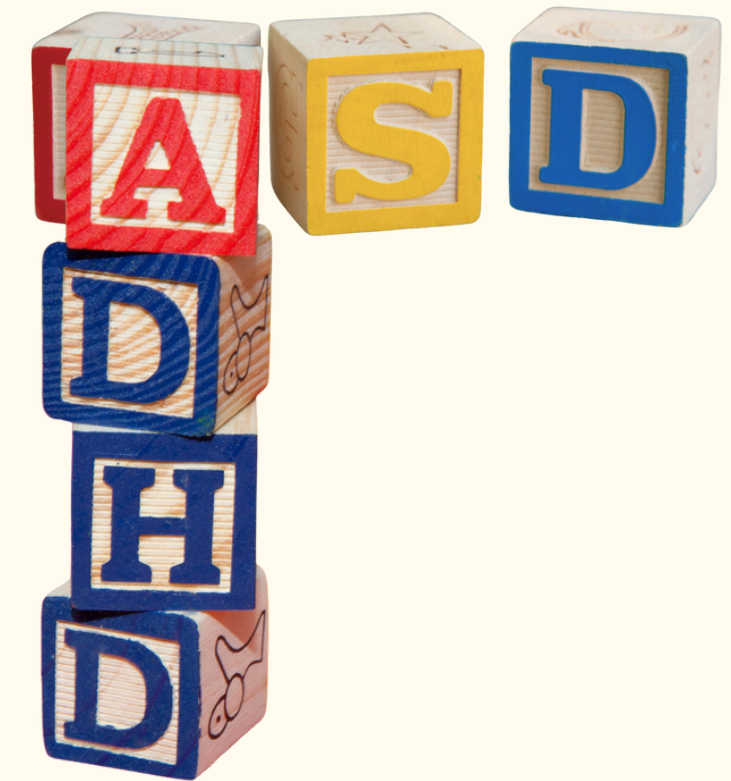
47%

(Kofler et al. 2024)



33-50%

(Barkley 2012;
Willcutt et al. 2005)



70-80%

(Tromp et al. 2021;
Craig 2016)

EXECUTIVE FUNCTION CHALLENGES



Autism Spectrum Disorder

*Rigidity, planning difficulties,
poor cognitive flexibility*



Attention Deficit Hyperactivity Disorder

*Impulsivity, attention deficits,
poor working memory*



Routine

Behaviour

Social

Play

School

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NEUROSCIENCE BASIS OF EXECUTIVE FUNCTION (EF)

- **Prefrontal cortex:** The brain's "CEO" - responsible for decision-making, planning, and regulating behavior.
- **Sensory & motor networks:** Provide essential input for decision-making by processing environmental information.
- **Limbic system:** Manages emotions and motivation, influencing focus and self-control.

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OCCUPATIONAL THERAPY ROLE

Built on neuroscience and developmental principles

Assessment & Identification

Pinpoint EF challenges that affected occupational performance



Executive Skills Training

Target inhibition, working memory, flexibility and others



Social Skills Intervention

Help in cognitive flexibility & perspective. May use social stories



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OCCUPATIONAL THERAPY ROLE

Built on neuroscience and developmental principles

Sensory-Motor Processing

Dysregulation affects attention, inhibition & working memory. Address motor planning deficits through play and sensory-rich environments, helping individuals ideate, plan, and execute motor actions.



Self-Regulation

Improve a child's ability to cope with sensory input, manage impulses, and engage in appropriate social interactions



Role Specific Practice

Simulate real-life roles (student, team member, shopper), use strategy like social stories, task analysis



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OCCUPATIONAL THERAPY ROLE

Built on neuroscience and developmental principles

Environmental Adaptation/ Supports

Modifying the environment to support EF skills (ie; timer, visual schedule)



CO-OP Approach

Cognitive Orientation to Daily Occupational Performance:
Goal-Plan-Do-Check in meaningful activities

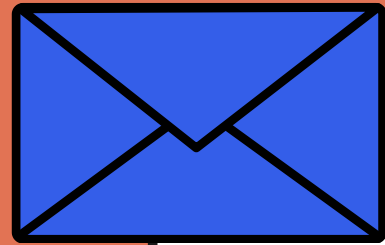


Collaboration

Coaching parents & teachers - consistency across environments



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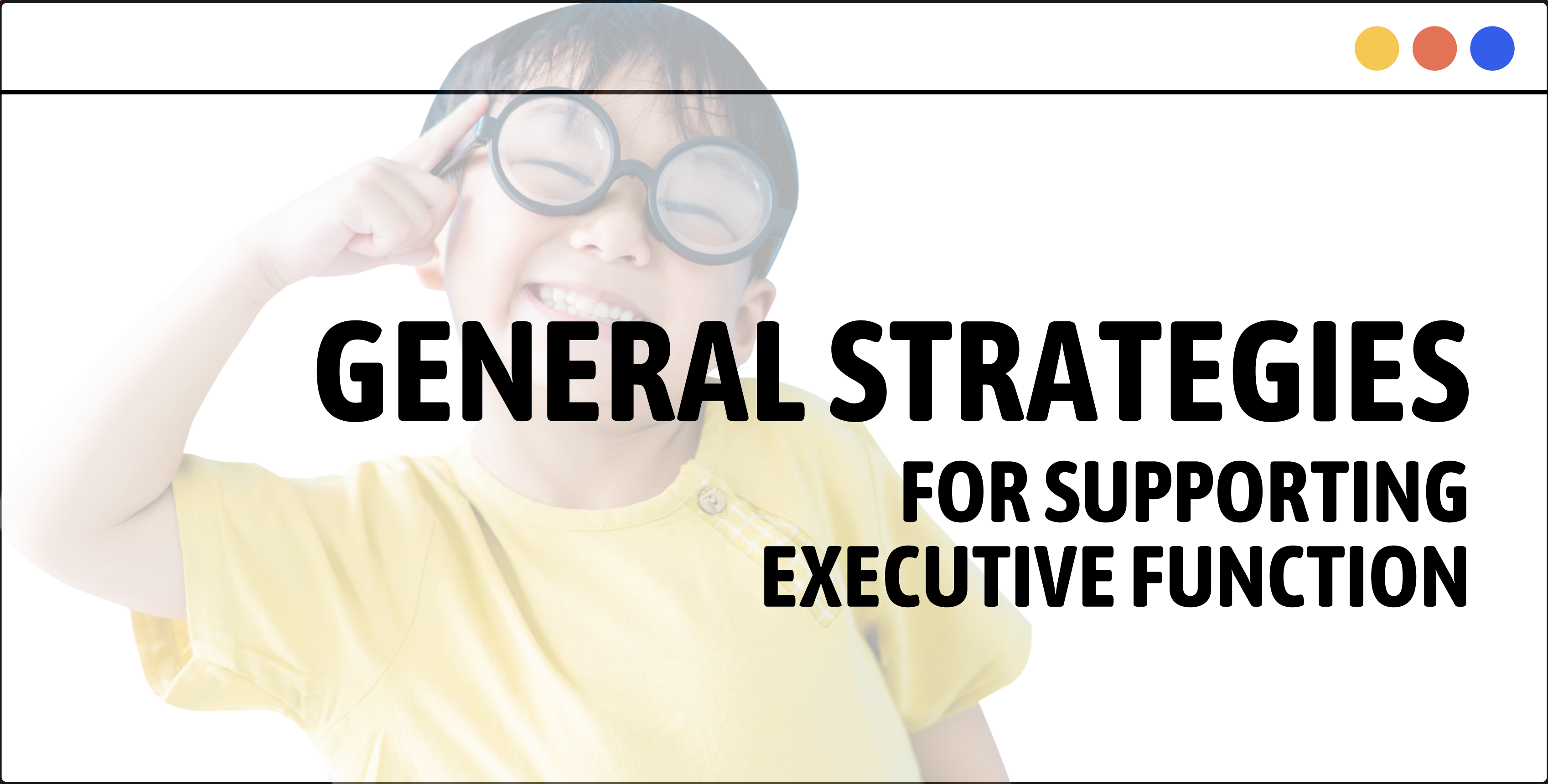


CORE OT PRINCIPLES

- Bottom-up sensory-motor foundation before cognitive demands/ Top-bottom
- Scaffolding: visual schedules, step-by-step supports, environment adaptations
- Practice in context
- Collaboration is crucial



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GENERAL STRATEGIES

FOR SUPPORTING EXECUTIVE FUNCTION

General Strategies to Support Executive Function

Use Visual Supports



Schedules, charts, and picture cues to guide routines and steps.

Break Tasks into Steps

Chunk large activities into smaller, manageable parts,



Establish Predictable Routines

Consistency reduces cognitive load and anxiety.



Provide Clear, Simple Instructions

1

1-2 steps at a time, both verbal and visual if possible.

Use Timers & Cues for Transitions

Visual timers, alarms, or music to signal changes.



Incorporate Sensory Breaks

Movement or calming activities to reset attention.



Encourage Choice-Making

Offer limited, structured options to promote decision-making skills.



Reinforce Positive Effort

Acknowledge progress, not just completion,



Practice Skills in Real-Life Contexts

Cooking, shopping, games, and daily errands.



Offer Quiet Zones

A calm space for emotional regulation, and focus,



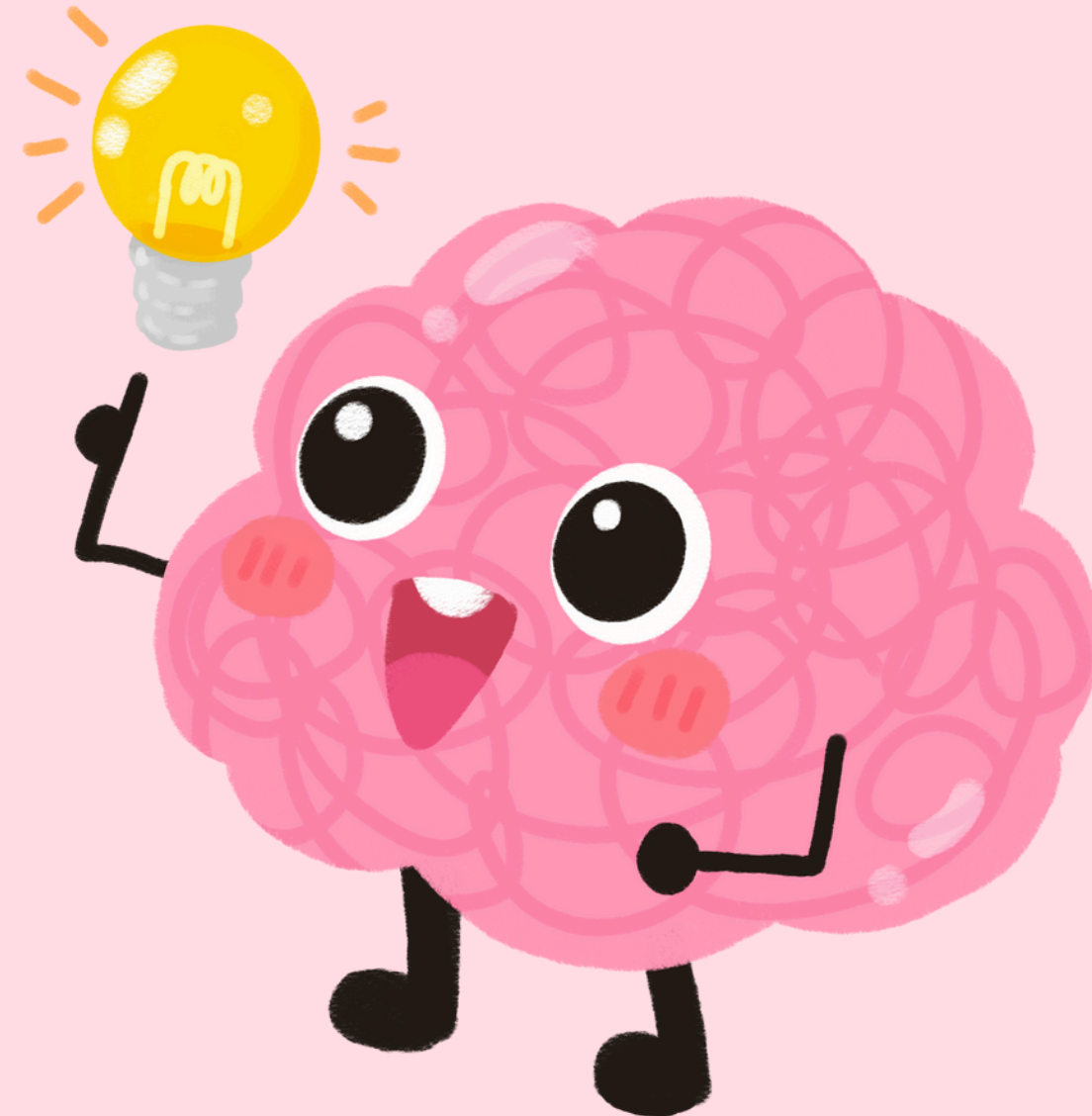
Gradually Increase Task Demands

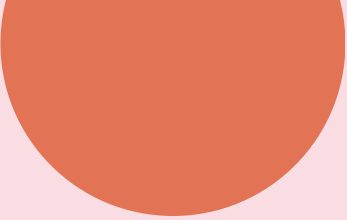
Start easy, then build complexity as skills grow.



Teach “Stop-Think-Do-Check” Routine

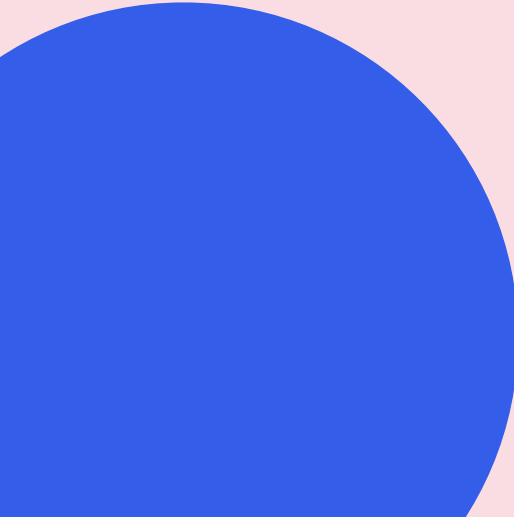
A self-monitoring process for any task.





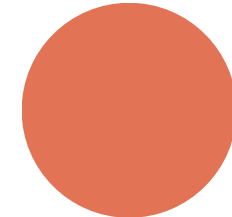
***Stronger together when health
professionals, educators, and families
unite, executive function thrives***

***Thanks For
✨ Listening ✨***





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