

Executive Functions (EFs)

Skills for success in life and learning¹

Skills essential for mental and physical health¹



Skills for cognitive, social, and psychological development¹

3 Core Executive Functions (EFs)¹⁻²

1



Working Memory: Ability to **update** information which is stored in memory

2



Inhibition: Ability to **control** attention, behavior, thoughts or emotions to **override** internal predisposition or external lure

3



Cognitive Flexibility: With the former two core EFs as a foundation, ability to **change** perspectives, think outside the box, and **adapt** to changed circumstances

Scientific evidence-based activities for improving EFs

age < 4³⁻⁶

1. Pre-kindergarten program
- Early education programs, curricula and coaching



2. Pretend play/Spontaneous play
- Children play who they'll be in a pretend scenario



3. Physical activity
- E.g. Brisk walking, running



age 4+⁷⁻⁹

1. Computerized memory training



2. Combination of computer and non-computer games

3. Aerobic exercise and sports



4. Martial arts



5. Mindfulness training



6. Classroom curricula



References : 1. Diamond A. Annu Rev Psychol 2013; 64: 135-68. 2. Mulder H et al. Front Psychol 2017; 8: 1706. 3. Welland C et al. Child Dev 2013; 84(6): 2112-30. 4. Ackerman DJ et al. Educational Testing Service 2017. 5. Thibodeau RB et al. J Exp Child Psychol. 2016; 45: 120-138. 6. Becker D et al. Early Education and Development 2014; 25: 56-70. 7. Diamond A et al. Dev Cogn Neurosci. 2016; 18: 34-48. 8. Diamond A et al. Science 2011; 333(6045): 959-64. 9. Diamond A. Curr Dir Psychol Sci. 2012; 21(5): 335-41.

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執行功能

讓生活與學習成功的技能¹

身體與精神健康必需的技能¹



認知、社交、心理發展的¹
技能

三個核心執行功能 (Executive Functions)¹⁻²

1



工作記憶 (Working Memory): 更新存儲信息的能力

2



抑制控制 (Inhibition): 在外部及內在因素引誘下, 控制注意力、行為、思想、情緒的能力

3



認知靈活性 (Cognitive Flexibility): 在以上兩項執行功能的基礎上建立, 改變觀點, 跳出框架思考及適應改變的情況

科學證據證明有助改善執行功能的活動

3-6
< 4歲

1. 學前班

- 早期教育課程及訓練



2. 角色扮演



- 孩子在假裝的情景中扮演其他角色

3. 體能活動

- 例如快走、跑步



7-9
4歲+

1. 電腦記憶培訓



2. 電腦與非電腦遊戲的組合

3. 帶氧運動



4. 武術



5. 靜觀訓練 (Mindfulness)



6. 班房課程



References : 1. Diamond A. Annu Rev Psychol 2013; 64: 135-68. 2. Mulder H et al. Front Psychol 2017; 8: 1706. 3. Welland C et al. Child Dev 2013; 84(6): 2112-30. 4. Ackerman DJ et al. Educational Testing Service 2017. 5. Thibodeau RB et al. J Exp Child Psychol. 2016; 45: 120-138. 6. Becker D et al. Early Education and Development 2014; 25: 56-70. 7. Diamond A et al. Dev Cogn Neurosci. 2016; 18: 34-48. 8. Diamond A et al. Science 2011; 333(6045): 959-64. 9. Diamond A. Curr Dir Psychol Sci. 2012; 21(5): 335-41. For Healthcare Professionals' reference and distribution. WYETH® is a registered trademark of Wyeth LLC. Used under license. WYE-PM-360-NOV-19

