

## Fine and Gross Motor Skills are Important for Self-Regulation and Early Academic Skills

'SKIP Research Bites' is a series of short summaries based on findings from the Singapore Kindergarten Impact Project.

### What does research tell us?

Research shows that young children with better motor skills perform better in academic skills, are more cooperative and productive during class activities, and demonstrate better control (or self-regulation) of their thoughts, emotions, and behaviour.

#### It is expected that:

- Children with better **fine motor skills** (e.g., cutting paper along a line with a pair of scissors) can spend more attention and mental resources on learning, and also experience less frustration during learning, compared to children who are still struggling with fine motor skills.
- Children with better **gross motor skills** (e.g., body balance; throwing a ball) tend to show better **socio-emotional self-regulation** (e.g., better social skills and less problematic behaviour) than children with poor gross motor skills.



### What is this study about?

In this study, we wanted to know whether K1 children's gross and fine motor skills are related to their early academic skills, and cognitive and socio-emotional self-regulation.

Over 1,200 children participated in this study during the first six months of their K1 year. The following aspects of their development were measured:

- **Gross motor skills**  
E.g., catching a thrown tennis ball with both hands
- **Fine motor skills**  
E.g., drawing geometric shapes; and building a tower with blocks
- **Cognitive self-regulation**  
E.g., holding and processing information in memory; focusing and resisting distractions; and shifting attention between tasks
- **Socio-emotional self-regulation**  
E.g., willing to share toys or other things with other children when playing (interpersonal relationships); and attempting new challenging tasks (learning-related behaviours)
- **Early academic skills**  
E.g., math, reading and writing



## What did we find?

1. Children with better motor skills have better cognitive and socio-emotional self-regulation and early academic skills, at the start of K1. Better control and coordination of **fine motor skills** are especially important for early academic skills.
  - Better fine motor skills is directly related to better math, reading, and writing skills.
  - Better fine motor skills is also related to better cognitive and socio-emotional self-regulation, which in turn, are related to better math, reading, and writing skills.
2. Better **gross motor skills** is related to better socio-emotional self-regulation.
3. Better **gross motor skills** is related to better cognitive self-regulation, which in turn, is related to better early math skills.

## What does it mean for teaching and learning?

The “Nurturing Early Learners” (NEL) Kindergarten Curriculum Framework includes gross and fine motor skills as a key component of holistic development.

Consistent with NEL’s strategies for motor skills development, Singapore pre-school teachers are encouraged to give children ample space and time for physical activities to develop their sense of balance, physical co-ordination and spatial awareness.

Teachers can provide children with more opportunities for developing motor skills. Some examples are:

- ⇒ Playing with manipulative toys such as building blocks, lacing, pegboards, transformers and puzzles that require fine finger strength and control
- ⇒ Engaging in art and craft activities, such as drawing, painting, and making collages
- ⇒ Moulding plasticine to form letters, characters, and numerals
- ⇒ Playing games that allow children to explore different types of gross motor movements (e.g., walking while balancing beanbags on child’s head)
- ⇒ Playing games that require gross motor co-ordination, such as ball games



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### To Learn More:

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