

# Physical Activity Curriculum Improves Early Childhood Executive Function & Language Development

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## AIM

To investigate whether a physical activity curriculum, embedded in early learning centres, influences child executive function (working memory, inhibition and shifting) and language development.



## BACKGROUND

- Executive functions are the mental processes that enable us to plan, focus attention, remember instructions, and juggle multiple tasks successfully<sup>1</sup>.
- Physical activity is increasingly recognized as an important determinant of executive function in adults<sup>2,3</sup>.
- Less is known of the effect of physical activity on executive function in younger populations, particularly during early childhood.

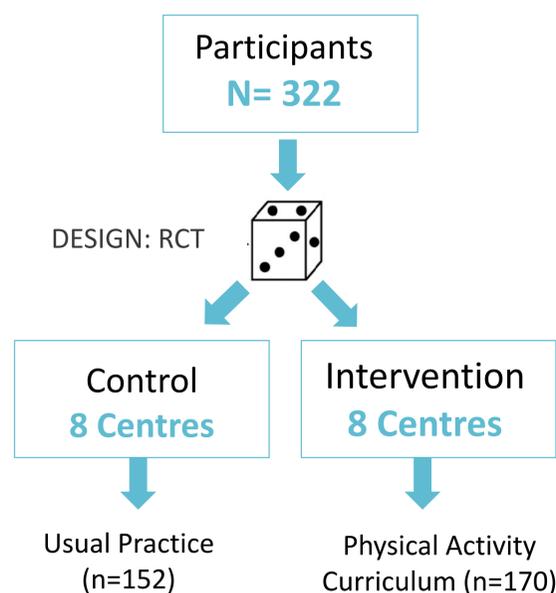
## MEASUREMENTS

Executive function and language development was assessed using the Early Years Toolbox<sup>4</sup> and included the following outcome measures:

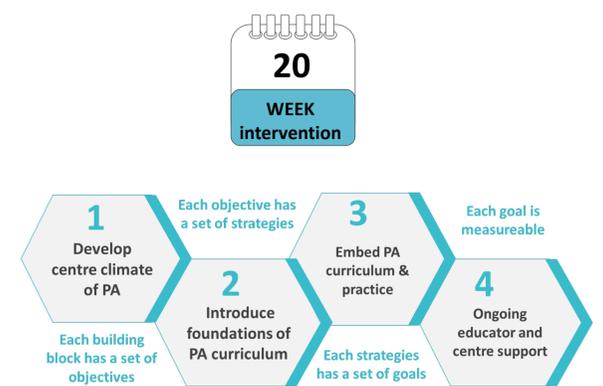
- Working memory (Mr Ant task)
- Inhibition (Go-No-Go task)
- Shifting (Card Sort task)
- Expressive vocabulary

**Analyses:** Linear mixed-effects models were used to determine differences in groups, adjusting for clustering of children within centres.

## DESIGN



## INTERVENTION



Physical Literacy coach assigned to intervention centres. Coach works one-on-one with early learning educators, to upskill and embed building block of PA curriculum.

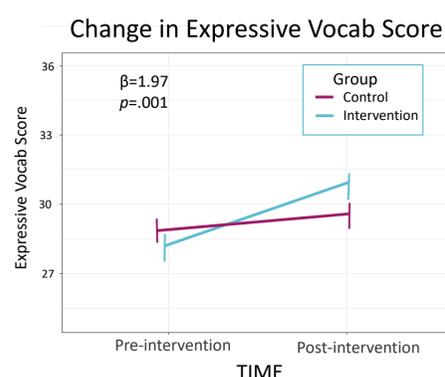
## RESULTS

Participant Characteristics

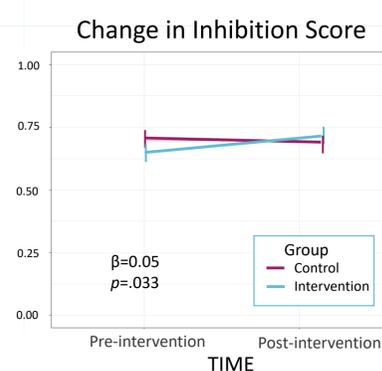
160

162

Mean age at baseline  
4.1 yrs



**Finding 1:** Children receiving the intervention had greater improvements in expressive vocabulary compared to control children



**Finding 2:** Children receiving the intervention had greater improvements in inhibition compared to control children

## CONCLUSION

A physical activity curriculum that is fully integrated into early learning centre practices is beneficial to improving aspects of executive function and language development, specifically:

- Inhibition
- Expressive vocabulary

### TRANSLATION

Roll out of the physical activity curriculum developed in this study, now called the Active Early Learning (AEL) curriculum, has commenced across 30 early learning centres in QLD and NSW.

[www.AELproject.com.au](http://www.AELproject.com.au)

