

Developmental Coordination Disorder (DCD), general coordination and fine motor deficits are prevalent in children with Rolandic epilepsy

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Introduction

- Cognitive problems in Rolandic epilepsy (RE) may involve speech, language and literacy (Pal et al., 2010, Smith et al., 2015, Vega et al., 2015).
- These problems are prevalent within families of children with RE and may represent an endophenotype.
- New evidence suggests dyspraxia or developmental coordination disorder (DCD) may also be present in children with RE (Brindley et al., 2016, Kirby et al 2017, Currie et al 2017).
- Previously, at the International Epilepsy Congress, we presented data indicating that the prevalence of DCD in children with RE is larger than siblings and healthy controls.
- Here we replicate the analysis with an expanded RE and sibling cohort.
- Furthermore, we investigated whether individuals without an indication for DCD had deficits.

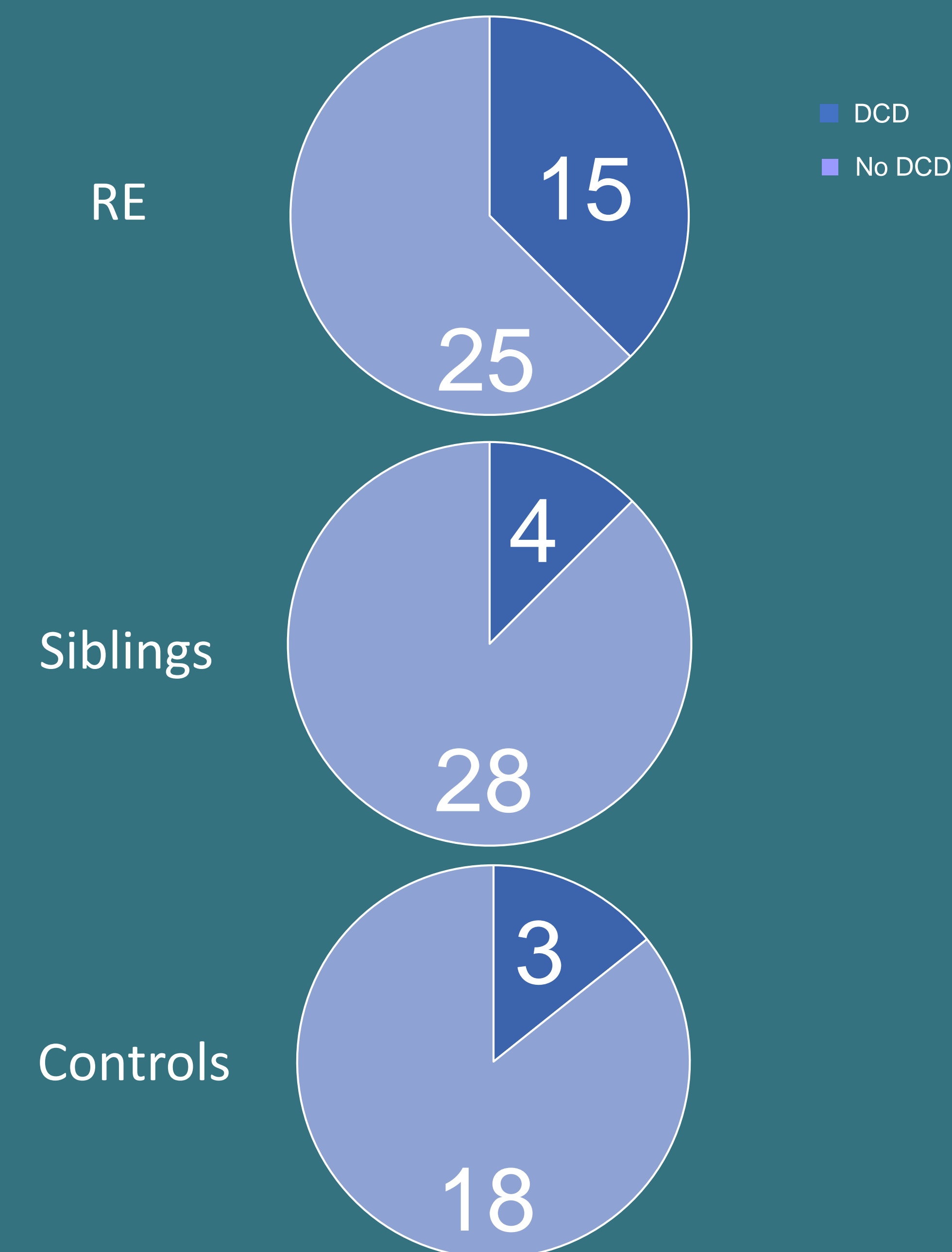
Goals

- Use the DCDQ'07 to calculate the prevalence of DCD cases in children with RE, their siblings and controls.
- Identify the key features in motor deficits from subscores in groups.
- See if motor deficits exist in non-cases.

Methods

- Age 4-17, IQ>80,
- Three groups: RE N=40, Sibs N=32 and Con N=21
- 55% of RE using AEDs
- % male: RE 60, Sibs 37.5 and Con 58
- Chi-squared testing
- MANOVA of subscores: Control during movement, fine motor and coordination. Sex as a covariate.

Indication for DCD



Group analysis

- 37.5%** of children with RE had an indication for DCD which was larger than the controls 12.5% ($\chi^2=3.57$, $p=.058$) and siblings 11.76% ($\chi^2=5.72$, $p=.017$).
- No significant difference between controls and siblings ($\chi^2=.0353$, $p=.851$)

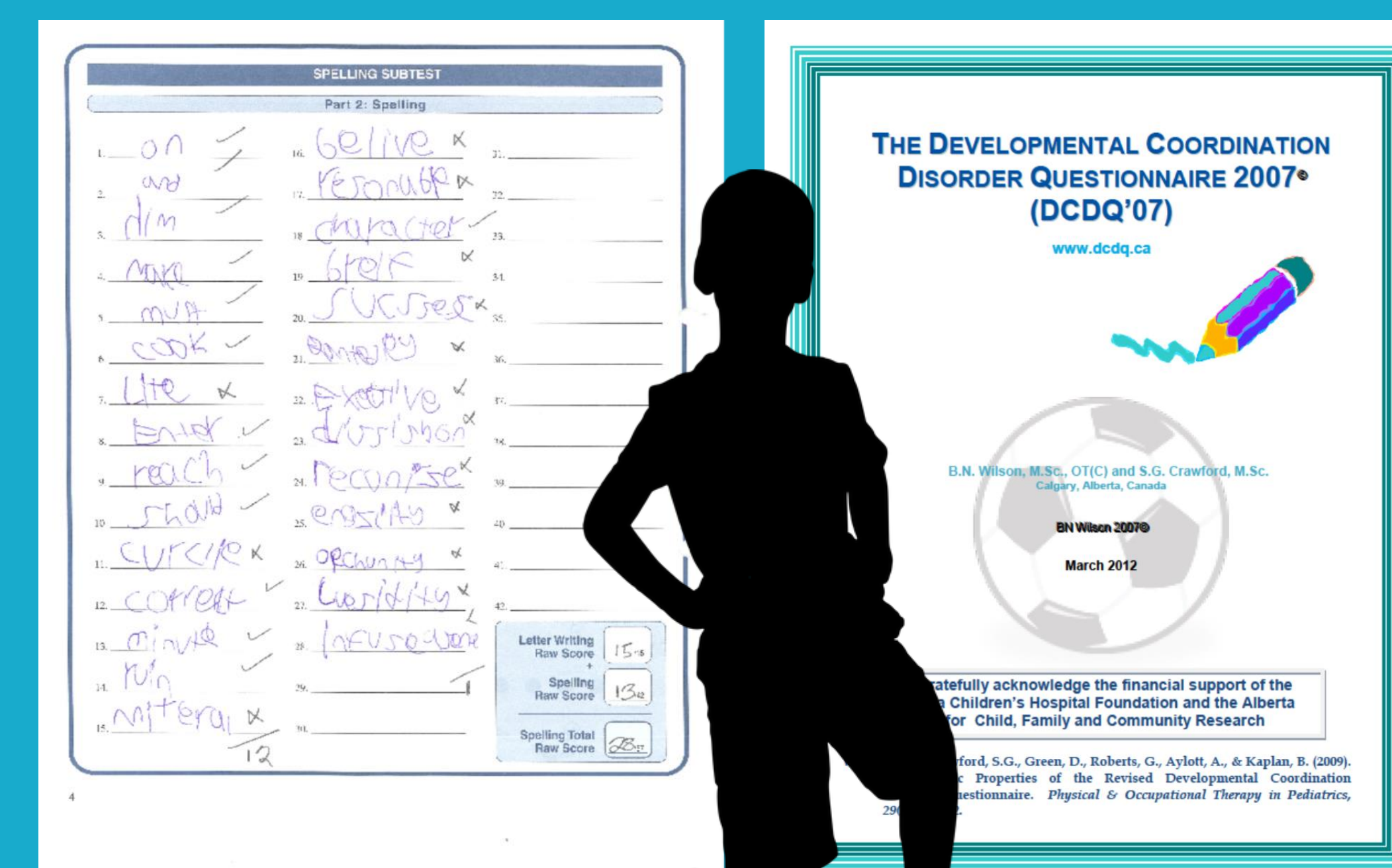
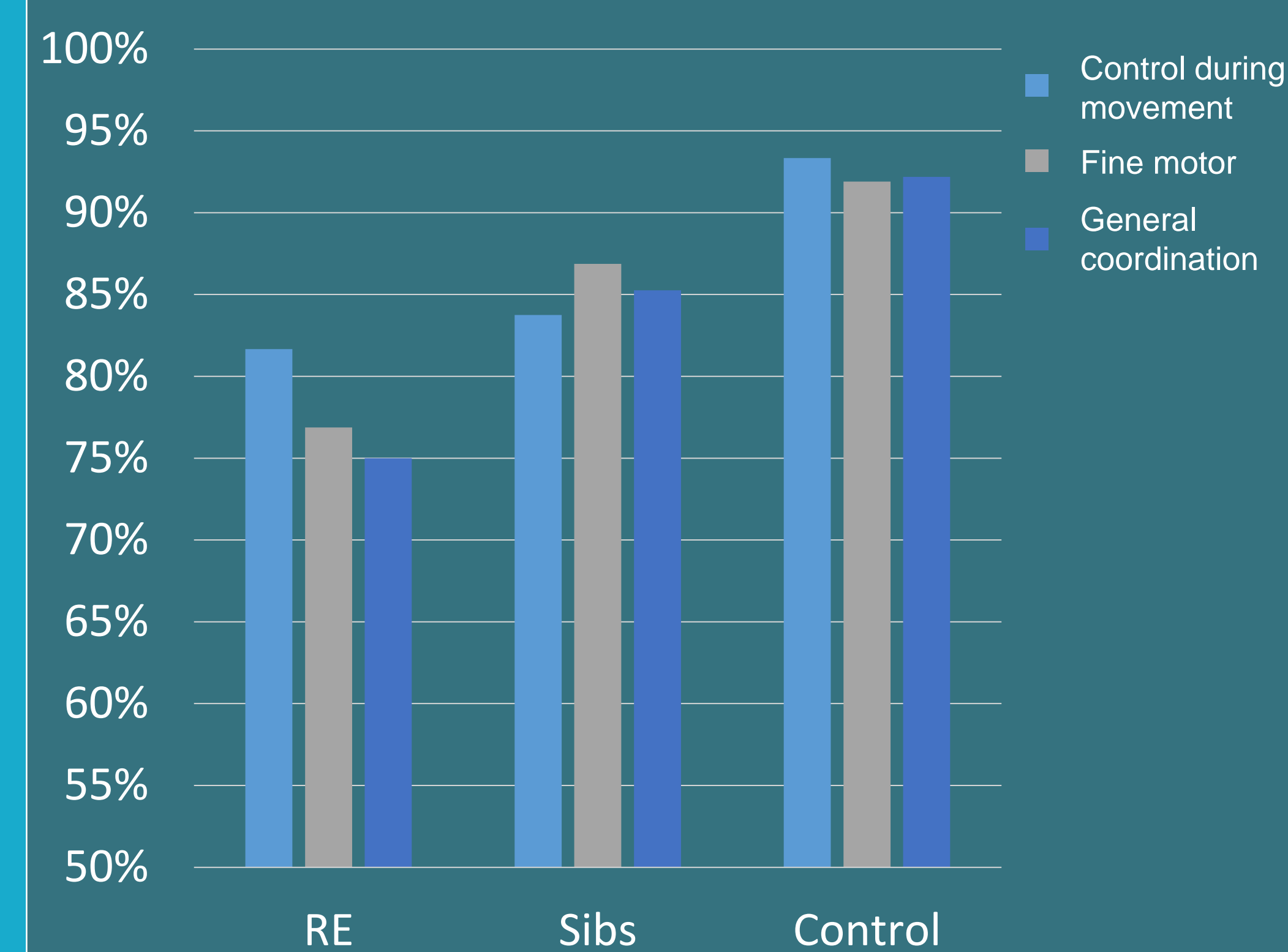
Increased risk of DCD in RE



Group analysis irrespective of indication for DCD

- MANOVA analysis of group subscores was significant. (Pillai's Trace, $F=2.336$ $p<.034$).
- Significant subscore were found for **general coordination** ($F= 4.41$ $p=.009$) and **fine motor** ($F=3.445$ $p=.019$)
- Bar graph of average subscores (percentage) shown below.

Group average subscores



Handwriting of 8 year old male with RE

Individuals without an indication for DCD

- MANOVA analysis was not significant. Pillai's Trace $F=1.62$ $p=.146$.
- Being female was a significant covariate for control during movement ($F=5.451$, $p=.023$).
- Interestingly, a post-hoc contrast ANOVA found significance for **general coordination** ($p=.015$) and **fine motor** ($p=.039$) between children with RE and healthy controls.

Conclusions

- These data suggest an **increased risk of DCD** in children with RE compared to healthy controls and siblings.
- As a group, in children with RE, there appears to be an a specific deficit in **general coordination and fine motor skills**.
- Interestingly, in children with RE, without an indication for DCD there is a similar deficit.
- These data suggest that in children with RE, motor problems are apparent but not universal.
- Further investigation is required to identify why some children with RE are affected with DCD.
- Possible factors could be age of seizure onset, seizure frequency or trauma at birth.

References:

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