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Fine morphocinetic motions in ASD children: effect of writing amplitude on the isochrony principle

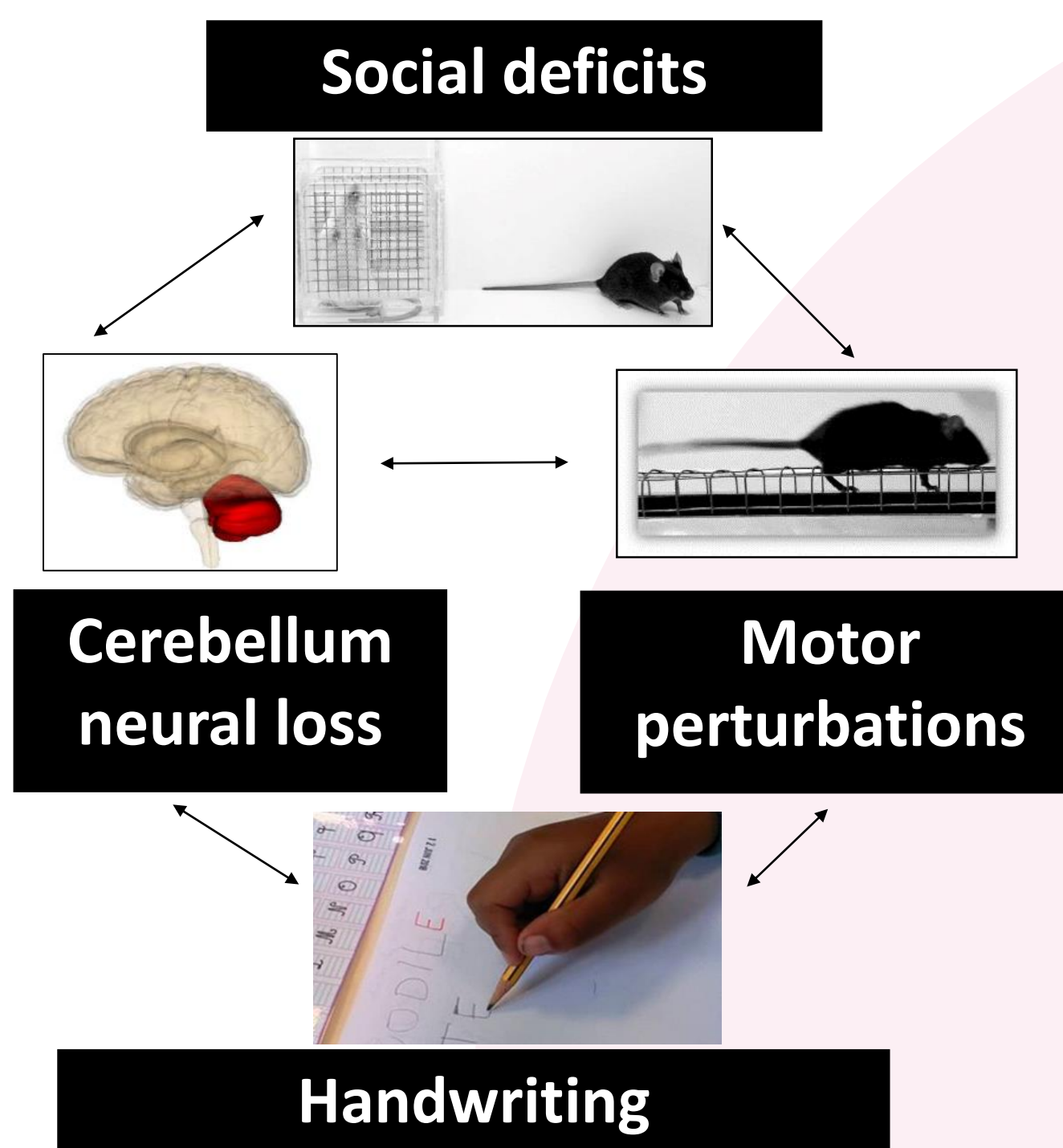
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Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental psychiatric condition characterized by 1) difficulties with social interactions and communication and 2) repeated and stereotypical movements or restricted interests.



Altered motor behaviours were recently observed in animal ASD models and related to **cerebellum disorders** (Jaber, 2017). The cerebellum is particularly involved in the control of **handwriting** (Palmis et al., 2017).

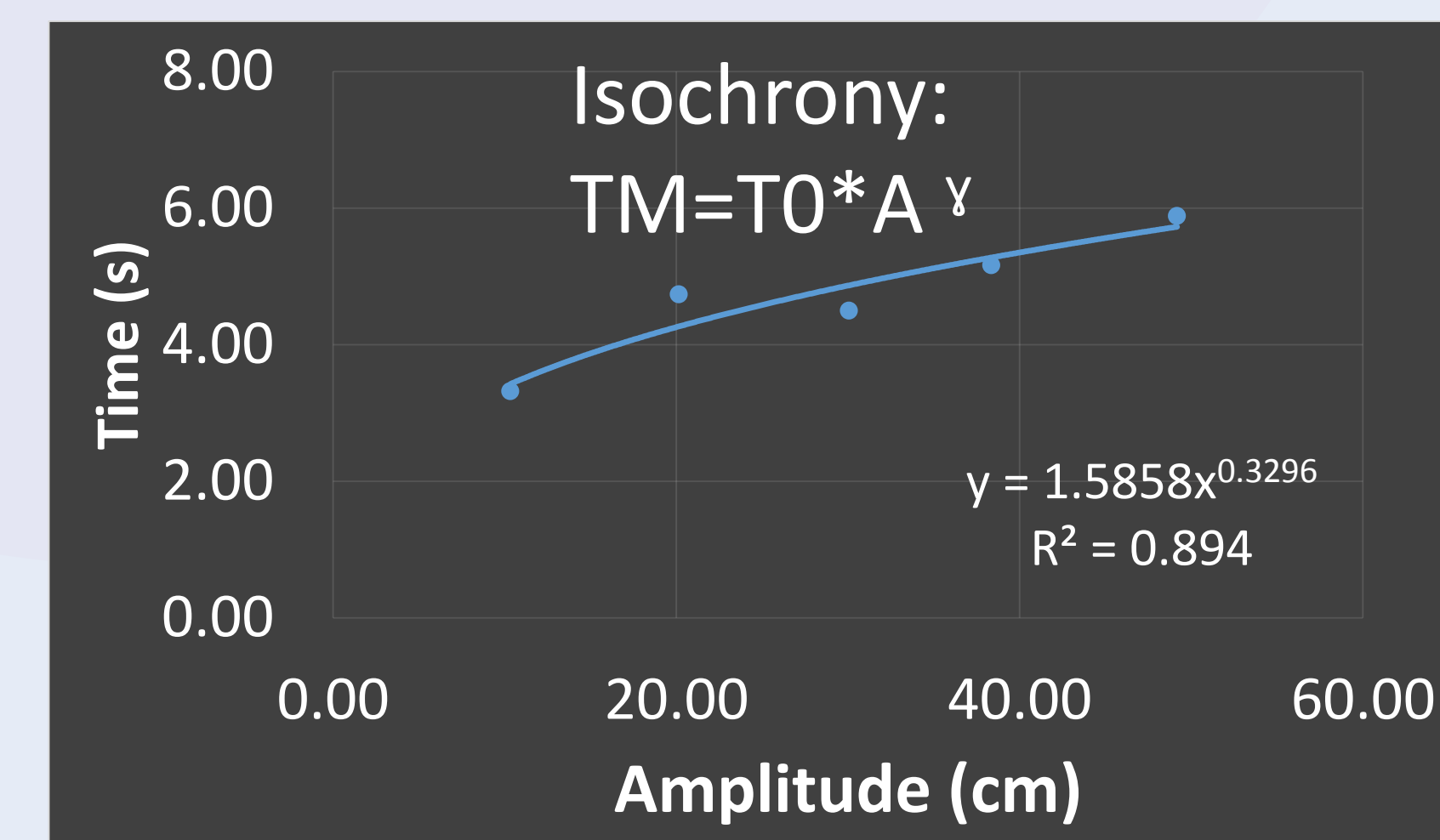
➔ Is the writing movement control perturbed in ASD children?

Method

- 7 TD children (2 boys, mean age= 9 years) vs 3 ASD children (1 boy, mean age = 9 years).
- 5 "e" letters of five different sizes in cursive mode.

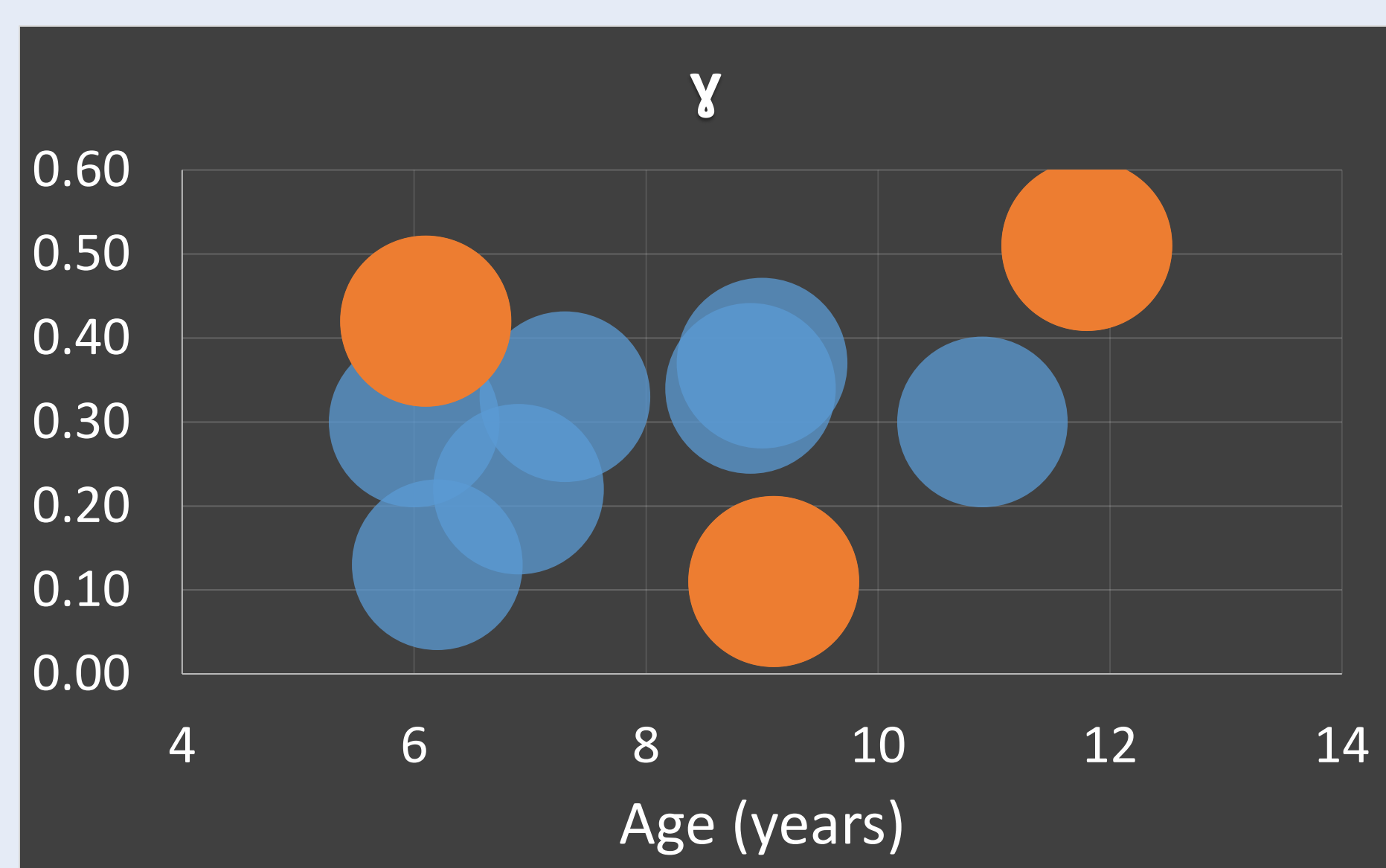


For each "e", metric coordinates were recorded using a digitizer and the Eye and Pen 3 software

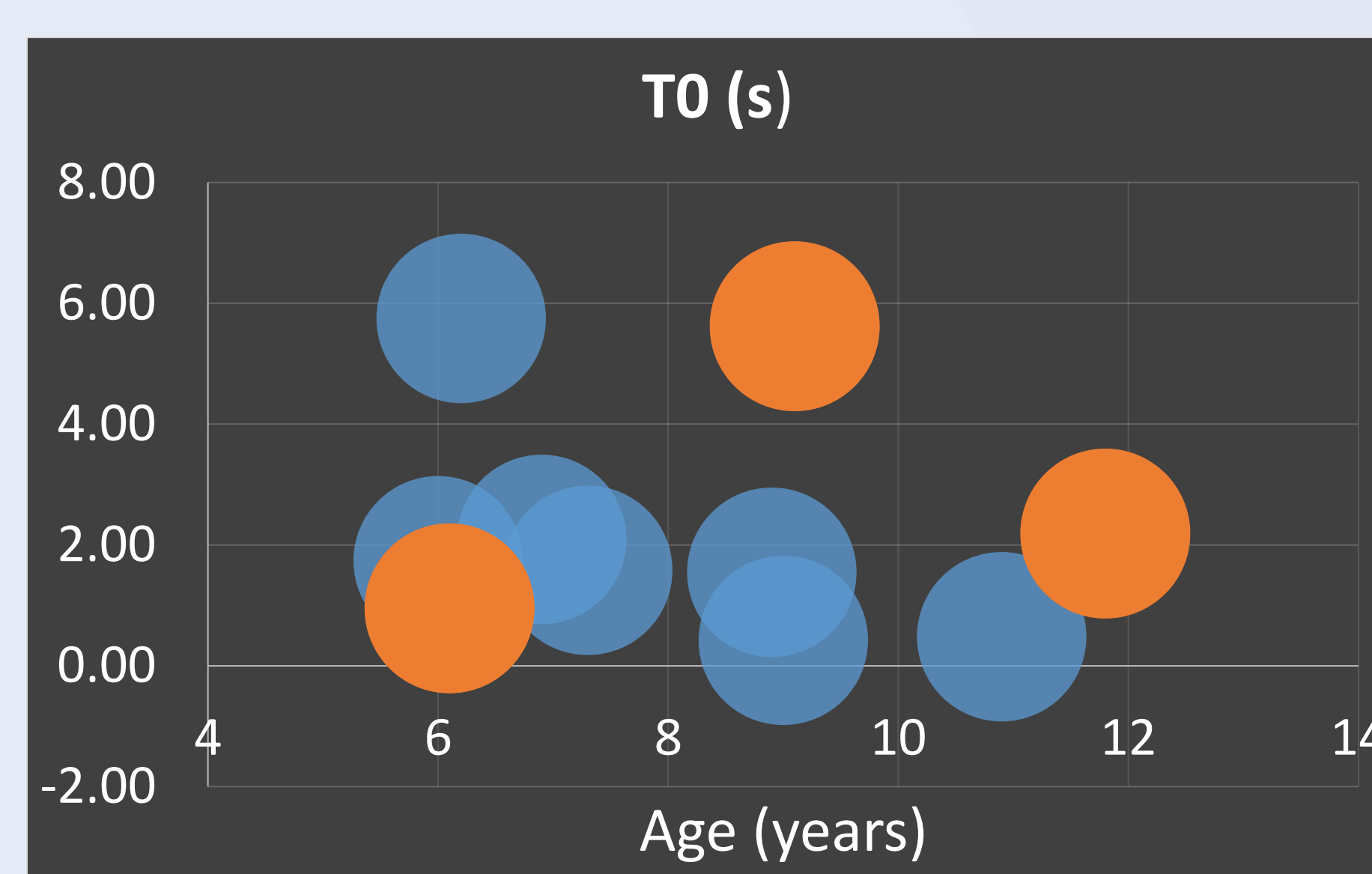


- Movement times and amplitudes were extracted and the isochrony coefficient (γ) and baseline time (T_0) were computed for each participant.

Results



● Typical children
● ASD children



Discussion / Conclusion

2 ASD children/3 are out the typical results for γ and T_0
=> **the isochrony principle could be perturbed in ASD**

This suggests that the cerebellum disorder could disturb the isochrony principle in the ASD deficit.

Future inclusions are necessary to conclude

References

- Jaber, M. (2017). Le cervelet comme acteur majeur dans les troubles moteurs des syndromes autistiques. *L'Encéphale*, 43(2), 170-175.
Palmis, S., Danna, J., Velay, J.-L., & Longcamp, M. (2017). Motor control of handwriting in the developing brain : A review. *Cognitive Neuropsychology*, 34(3-4), 187-204.

