

---

# In dyslexic children, the proprioceptive therapy improves multisensory integration disorder and reading abilities. Pilot, randomized clinical study.

Luc Virlet\*<sup>1</sup>, Laurent Sparrow , and Cedrick Bonnet

<sup>1</sup>Laboratoire Sciences Cognitives et Sciences Affectives - UMR 9193 – Université de Lille, Centre National de la Recherche Scientifique – France

## Résumé

Research shows that dyslexic children have multisensory integration disorders (MSID) when binocular fusion is dissociated in the form of sound-induced visual scotomas and labile vertical heterophoria. We tested whether proprioceptive therapy improves MSIDs correlated with reading issues in dyslexic children?

Three groups participated: dyslexic children with a speech therapy (n=9); dyslexic children with speech and proprioceptive therapies (n=10); normo-reader children (n=9). We evaluated silent reading (Eyetracker: Gaze duration, word frequency effect, initial saccade size) and oral (C index of Alouette-R test), in an initial session and after nine months of therapy. Registered on clinicaltrials.gov: NCT03448237.

When the proprioceptive therapy was added:

- MSIDs significantly improved for sound-induced scotoma and labile vertical heterophoria.
- Saccade size, lexical access, and word frequency effects no longer differed from normo-reader children.
- The C-index showed a gain of +2.09 SD, (d=0.99).
- These improvements were significantly correlated with each other.

We validated our hypothesis that improvement of MSIDs improves oral and silent reading skills in dyslexic children.

We will discuss the strengths and limitations of this study, and the implications of these results.

**Mots-Clés:** Multisensory integration disorder, Proprioception, Dyslexia, Sound, induced scotoma, Labile vertical heterophoria

---

\*Intervenant