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A survey of near visual function in Latvian school-age children with and without learning difficulties

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Introduction

- It is widely accepted that early detection and treatment of uncorrected refractive errors, binocular visual anomalies and/or amblyopia will reduce the risk of long-term visual problems.
- Reading difficulties are commonly associated with disorders of visual function.
- Another reason for consideration of visual problems in occupational therapy practice is that some children with visual problems may have to work harder than their peers to perform well in school.

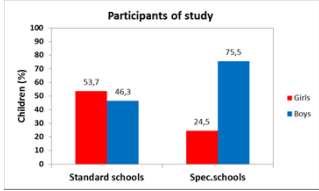
Birbaum (1984, 1993), Cooper et al. (1987), Bullimore & Gilmartin (1988), Perreault (1992), Lehmkuhle et al. (1993), Goldstand et al. (2005), Bucci et al. (2008), Dusek et al. (2010), Paloma-Alvarez & Puell (2008, 2010), Quaid & Simpson (2013)

The aim

- This study was designed to describe and compare near visual function of school-age children (7-18 years of age) from standard schools and school with different education system for children with learning difficulties.

Participants

- In study participated 4754 children from schools in Riga:
 - > 278 children with learning difficulties;
 - > 4476 children from standard schools.



School Type	Girls (%)	Boys (%)
Standard schools	53,7	46,3
Spec.schools	24,5	75,5

Method

- Vision screening in schools
 - > Visual complaints
 - > Visual acuity at far and near
 - > Binocular vision (Worth test)
 - > Phorias (Madox cylinder test)
 - > Stereoacuity (TNO test)
 - > Accomodation facility (lens flipper method)
 - > Color vision (HRR test)
 - > Vergence facility (prism flipper method)
 - > Near point of convergence
 - > Reading speed

} at near

Results (visual complaints)

- Statistical analysis (one way ANOVA) demonstrated that Latvian population of school-age children with learning difficulties have more visual complaints (~28%).




Photo: www.visionhelp.wordpress.com

Dusek at al. (2010) demonstrated similar results in Austrian population of school-age children.

Results (visual acuity)

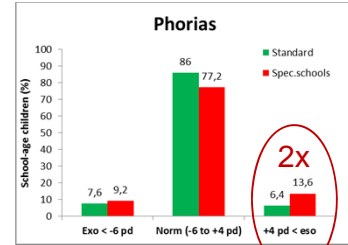
- There is no significant difference in visual acuity.



Dusek *et al.* (2010) demonstrated poorer distance visual acuity.

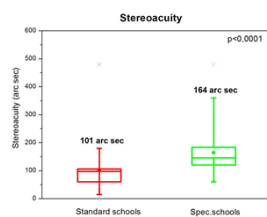
Results (phorias)

- Children with learning difficulties more esophoric.



Dusek *et al.* (2010) – exophoric deviation at near.

Results (stereovision)



Lack of stereovision

standard schools	spec.schools
3,8%	13,7% 3,6x

Results (color vision)

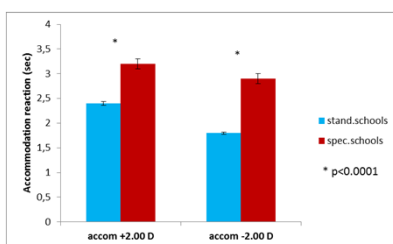
- Color vision defects

Children from:	standard schools	spec.schools
Girls	0,3%	0,0%
Boys	3,3%	12,7% 3,8x

In Latvian children population only 4% boys with color defects.

Results (accommodation)

- Accommodative function (contraction & relaxing)



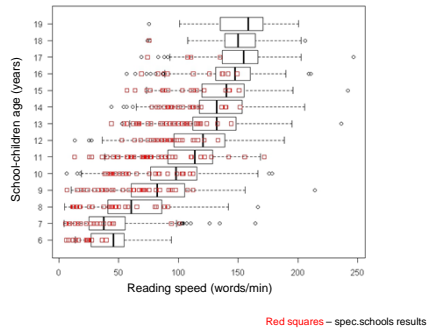
Dusek *et al.* (2010), Paloma-Alvarez & Puell (2008) – accommodation amplitude and binocular accommodative facility reduced.

Results (vergence)

- Our data demonstrated that children with learning difficulties have reduced vergence facility and also reduced near point of convergence (NPC).

Dusek *et al.* (2010), Paloma-Alvarez & Puell (2010), Quaid & Simpson (2013) – reduced vergence facility & NPC.

Results (reading speed)



Conclusion

- Our data demonstrated that for school-age children with learning difficulties visual functions are changed and eye care professionals can help in some conditions – in balancing of accommodation and vergence system.

Thank You for attention!

Acknowledgements:

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