

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

Gunta Krūmina, Jelena Jakovleva, Aiga Svede, Evita Kassaliete, Gatis Ikaunieks
University of Latvia, Department of Optometry and Vision Science

Background:

The relationship between near visual function and learning difficulties of school-age children is not well known. Balanced near visual function is very important in learning process, particularly in reading. 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.

Method:

In study participated 88 children with learning difficulties and 3819 children from standard schools in Riga, Latvia. Vision screening was performed at the schools. We evaluated visual acuity at far and near; binocular vision, phorias and stereoacuity at near; near point of convergence; eye accommodation and vergence facility; colour vision.

Results:

Our study results show the colour vision defects of children with learning difficulties are three times (4,6%) more as for children from standard schools (1,7%). Children with learning difficulties haven't stereovision in 16% cases. Children from standard schools haven't only 5% cases. Statistically important difference is also for stereovision – children with learning difficulties have more reduced stereoacuity (177 arc sec) as school-age children without learning difficulties – 103 arc sec. Near point of convergence is further for children with learning difficulties – 5,4 cm (for children from standard schools 4,8 cm; $p < 0,05$) and for positive accommodation need longer time 2,4 sec (1,8 sec; $p < 0,05$).

Conclusion:

This research indicates there is significant difference between near visual function of children without and with learning difficulties. Our findings suggest a reduced stereoacuity, more total loss of stereovision, reduced time of positive accommodation reserve facility and more defective colour vision such could be the reason why children have difficulties in learning process.