Visual acuity and visual performance in children with ophthalmopathy


**Background and aim**

The aim: to assess visual performance before and after pleoptic training.

Subjects were 62 children divided into 2 groups:
(1) with mild ophthalmopathy (N=36, ametropes with and without amblyopia, visual acuity was in the range 0.5-1.25 (0.92±0.16)),
(2) with severe ophthalmopathy (N=26, optic nerve atrophy and retinopathy, visual acuity was in the range 0.08-0.63 (0.2±0.17)).

Pleoptic training (load)
The task: To find a reference image (shown in the right upper corner) in the test field (20 min).

### Visual acuity and visual performance

#### Test 1

Bourdon test with Landolt rings

To find all the rings, identical to the reference ring (presented at the beginning of the test), as fast as possible.

**Test 2**

detection of the gap in the non-threshold Landolt ring

To point position of the gap as fast as possible.

\[ Res = \frac{0.5434 \times N - 2.807 \times N_{\text{missed}}}{t} \]

where \( Res \) - result in points,
\( N_{\text{missed}} \) - number of missed rings,
\( N \) - whole number of presented rings,
\( t \) - whole test time, sec.

Assessment of visual performance after the treatment showed a small increase in both tests after pleoptic training, though there was no increase in visual acuity.

Effectiveness of trainings should be assessed not only by VA increase, but also by visual performance tests which might be more sensitive.

Partial correlation between visual acuity and visual performance (excluding age factor) appeared to be \( r_s = 0.472 \), \( p<0.01 \) by test-1; \( r_s = 0.607 \), \( p<0.01 \) by test-2.

The visual performance in group with mild pathology was significantly better than in the other group (Mann–Whitney test, \( p<0.01 \)).

**Conclusions**

Visual performance is correlated with visual acuity and is significantly lower in children with severe organic ophthalmopathy even in over threshold tasks.

Visual performance tests seems to be sensitive test for pleoptic training effectiveness.