

PHYSICAL EDUCATION AND SPORT PROBLEMS OF CHILDREN WITH OCULAR DISEASES

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The article aims to represent the importance of special pedagogical methods for children with ocular diseases. Since an illness of the eyesight of any scale can bar motion development, the run of bodily abilities and motion coordination, it is vital to understand some basic methods of physical education designed for children wearing glasses.

Those affected in the problem become unsteady in motion in the course of growth, finally, habits of normal lifestyle change as opposed to peer group. Theories are verified on the basis of ability and anxiety tests performed among children aged 6-12 with the help of a specially designed barrier field. Researches conclude that children's perceptual, learning and motion coordination difficulties need special attention since these combined with eyesight defects will further complicate the fulfilment of school expectations.

Keywords: motion coordination, anxiety, visual perception test, ophthalmological diseases of children.

Gym trainers and teachers throughout their career have numerous occasions to find students wearing glasses in gymnastics class, beyond this, students that should wear glasses when participating in activities. According to my experience and analysis, nor ophthalmologists neither school doctors inform parents about this disease of their child, they limit information to short and superficial advices. Although for doing sport effectively and safely it would be highly desirable for teachers to have relevant ideas concerning ophthalmological diseases of children.

During my work I analysed the impact of different stages of ophthalmological diseases in children on their motion development, on some of the psychic functions, on development of identity. The case is not that the child with ophthalmological disease is a strange creature or is in any way different from the peer group. But we have to take into account that an illness of the eyesight of any scale can bar their motion development, the run of bodily abilities and motion coordination, thus affecting action of the psyche. Those affected in the problem become unsteady in motion in the course of growth. As a result of this, habits of normal lifestyle change as opposed to peer group. "Causes for injuries of visual organs have largely changed since 1975. The number of children with ophthalmological diseases has increased due to the decreasing number of mortality among prenatal and to their improving life expectancy. Natal disorders of the visual system are

often accompanied with impairment and faults of other fields of the nervous system.” (Bakonyi & Nádori, 1981)

Aim of analysis

The aims of analysis were set so as to get a comprehensive picture of the motion coordination capacities and health conditions of primary school children with ophthalmological problems. In relation to this I had the chance to get to know their living conditions and sporting habits. I intended to analyse the impacts of evolution of ophthalmological diseases in different peer groups, bound to distress and to measurement of visual perception capabilities of affected children. My intention was also to have an insight into factors that influence the evolution of ophthalmological diseases, impacts that hit peer groups.

Methods of analysis

I involved a total of 633 individual between ages of 6 and 10 residing in Kaposvár city. Analysis program consisted of a survey of motion coordination and of distress together with a test measuring development of visual perception. We completed this with a questionnaire to refine certain circumstances. Exercises for motion coordination were mapped out on the ground of Mariann Riegl’s method (Riegl, 2001). We set up a coordination barrier field to be able to measure abilities of motion coordination. We measured the time necessary for completion of the barrier field. We sought answer for the following questions:

- Is there significant and measureable difference between the qualities of motion coordination of children with and those without eyesight problems
- Is there any difference in the levels of knowledge in attainments broken down to groups
- Is there any difference in efficiency performing the tasks with and without wearing glasses
- Is there any difference in performance of 1st and 4th grade students and if so to what extent is it traceable
- Are differences traceable in coordination abilities.

Compilation of exercises of the coordination field we concentrated on abilities that have connection with

- Sharpness of vision
- 3D vision
- Vision in depth
- Perception of space

I worked out a chart of points for evaluation that has a scale from 0 to 3 and from 0 to 4 for each exercise. Eight exercises were represented in the program and we analysed the following abilities:

- spatial orientation
- motion perception
- 2-leg coordination
- Hands-feet coordination
- Ability for ball management
- Dynamic balancing ability

Completion of the coordination field was measured by time therefore speed coordination had a preferential role. We measured time and quality of completion. Video recording and thereafter evaluating the children's performance made timing and scoring more precise. We performed a second timing only among children with ophthalmological problems. They had to do the exercise with and without wearing glasses too, after the whole class had finished the first exercise. We used the 42-question version by Taylor children's form of manifest anxiety scale (Klein, 1968). Visual perception test was based upon the Frostig test (Sándory, 1987). Questions focused on children's ophthalmological diseases, on situations for wearing glasses and on their lifestyle. Conclusion was set up to determine statistical significance.

Results

158 pupils from Kaposvár wear glasses which mean a 24% to the total number under survey. Classification of ophthalmological diseases is shown in the Chart 1.

Chart 1.

Classification of tested persons by type of ocular diseases							
		Ametropic problems			Illnesses of visual organs		Total
		Myopia	Hypermetropia	Strabism	Amblyopia	Other	
4 th graders		51	24	27	4	4	110
	male	23	15	15	3	2	
	female	31	9	13	1	2	
1 st graders		11	8	24	2	3	48
	male	2	6	8	2	3	
	female	8	2	17	0	0	
total:		62	32	51	6	7	158

Results in performance of motion coordination are shown in Chart 2. Evaluating the results we established that there is a significant difference in the motion coordination level of children with ophthalmological problems as compared to the healthy peer group. The difference is most obvious in the quality of speed coordination and in spatial orientation. We measured time for completion of barrier field to evaluate speed coordination, as referred in *Methods*. The average result is 57.345 sec. (Standard deviation: 40.168), as shown on Chart 2.

Chart 2.

Speed of completion of barrier field (sec)			
	No. of students	1 st timing	
		Average	Standard deviation
Total	633	57,345	40,168
1 st graders	275	66,771	24,719
1 st graders	358	48,314	48,854

The weakest performance was shown by the group of 6-years, wearing glasses. While for the second run, when wearing glasses, their performance made the greatest improvement (6.958 sec better). The 4th graders (10-years)

showed an improvement of 1.272 sec. The reasons for this improvement are partly that they performed the task wearing glasses and partly that they had already known the task and could perform it easier. Results are more moderate in the older groups, (both test and control), and improvement is smaller for the second run as well. Here we have an interesting observation that the difference between test and control groups of the 4th grade students (10-years) is far more significant than that of the 1st grade students (7-years). This means that a pupil with limited eyesight develops awkwardness as compared to a healthy peer. The reason for this is partly because most of them do not perform regular physical exercise, and a number of them distance themselves from doing sports. Only 11 students do sports on a regular basis or attend extra gym class except the normal school gym out of the 158 wearing glasses. The weakest performance was provided by a 7 years old boy with strong myopia and with overweight, with a result below 105.500 sec.

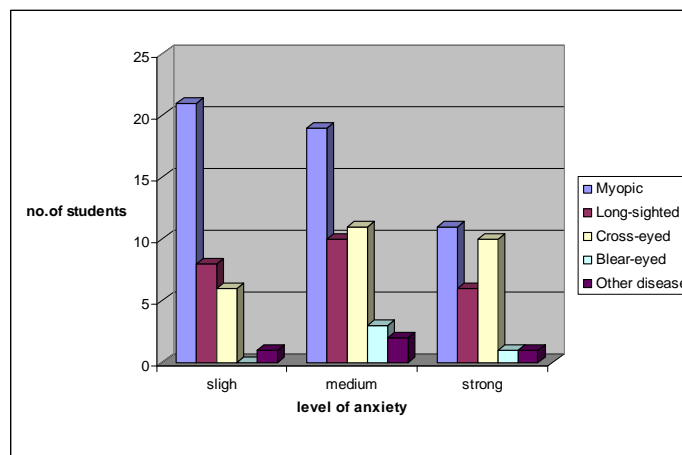
Further examinations sought if there is any difference between children's performance in different ability categories, referring to the tasks in the barrier field. Testing stereoscopic sense of direction, dynamic sense of balance and motion perception we derived that test group (wearing glasses) and control group (healthy) of 1st graders (7-years) performed nearly at the same level (only with small positive bias to the healthy group). Meanwhile 4th grader (10-years) spectacled students performed worse than their control group. Throwing to target requiring sharp eyesight and good stereoscopic sight was performed with the most difficulties by the 6 years old children with ophthalmological problems. It is interesting to observe that cross-eyed children with defective stereoscopic sight did poorly in all three tasks requiring stereoscopic sense of direction, especially in motions requiring a turn. In tasks requiring ball control and combined hands-feet coordination, those wearing glasses performed only slightly worse, but spectacled 4th grader (10-years) children did the weakest. The same was observed in skipping ahead while propelling the ball.

A further part of our examinations was analysis of perception. Perception is a complex process including organoleptic perception, interpretation and processing of the received information, the possibility of response, the evaluation of feedback and providing further information at the same time. The Frostig test evaluates three parameter data with which we map and find children who lag behind in their compliance with school. The success of a pupil in progress at school depends on the interaction of the signals perceived by sense organs. In doing more complex tasks it is helpful if combined signals of different kinds of information develop an appropriate associative contact. The development of this contact is supported by experience gained during school activities. A number of authors mention that besides physiological dysfunctions and factors of sociological environment, deficiencies of organoleptic function and the lack of associative interaction among sense organs are responsible for the development of learning difficulties. Most authors emphasise the failures of perceptuo-motoric arrangement. According to the visual perception test, abilities of pupils with impaired eyesight or glasses are not weaker than those of their healthy peers. (PQ: $n^1=227$, 94, $21-n^2=47$, 93.8)

The anxiety test aimed at the analysis of a group of children with impaired eyesight according to their tendency to develop anxiety. The children provided subjective opinion of their emotional status by ticking "yes" or "no" answers. On evaluation of the anxiety test of the 10-year-old group it gained evidence that bespectacled pupils' tendency to develop anxiety is stronger than that of those not wearing glasses, since the average

number of “yes”-s in both groups significantly differs. Based on the data we created three groups: those with strong, medium and slight anxiety as in Forrainé’s classification. 8.2% of the tested persons fall in the group of strong anxiety as compared to a 6.2% of the control group.

Chart 3: Level of anxiety broken down to disease groups



A significant part of bespectacled pupils’ physical education methods is about changing external causes of anxiety (punishment, abuse, aggression) for internal causes generated through interesting, practicable tasks (customized tasks), putting the stress on the joy in the task. The goals have to be the elimination of anxiety rooting in an inner pressure for good performance, and expelling the feeling of failure. Generalised anxiety is a permanent status. For decreasing anxiety, treatments should target the break of effects adversely influencing everyday activities, achieving an improvement of lifestyle. Physical exercise as well as relaxation diminishes anxiety. As Faludy writes: „anxiety shows a significant tendency for cronicization.” (Faludy, 1988) This is why it is important to realise the phenomenon and treat health and related social complications with all means available. Any result is only possible by the combined efforts of teachers and psychologists, through re-structuring the relationship between parents and children.

Our researches establish that children’s perceptual, learning and motion coordination difficulties need special attention since these combined with eyesight defects will further complicate the fulfilment of school expectations. We are talking about disorders that may successfully be treated, corrected with suitable, modern pedagogical methods, but special procedures need expertise. The suggested main goals in the physical education of children with impaired eyesight are as follows:

- providing the pupils’ health
- all-round development of physical abilities, stamina, load-bearing capacity
- developing a need for physical exercise.

Development of physical activity, spatial orientation and capacity for motion adaptation are important to take into consideration. Elimination of handicaps rooting in faults is an important issue. We should endeavour to eliminate inhibitions and anxieties developed in the act of motion. Pupils should only be exempt from attending physical education classes for an explicit instruction of an pediatric eye-specialist! Tasks involving violent

jolting, lifting heavy weights or strong pressure should be avoided in order to protect the health of eyes.

Recommended motions

1. Exercises developing motion coordination
 - Exercises developing spatial orientation.
 - Perception of space.
 - Exercises developing sense of balance.
 - Quick reaction for movement, creating quick and effective reflexes.
 - Fine motor skills.
2. Exercises repairing posture (carriage)

Methodological recommendations in fields of motion learning

- Be in contact with the ophthalmologist.
- Do not endanger corporeal health, omit prohibited exercises.
- Do not make pupils feel our caution.
- Make deeper explanations.
- Give them chance for error correction.
- They should work a lot with hand-instruments.
- They should study sports that can be accompanied with music.

Only a pupil with regular and good sports activity can become a teenager or adult with good upstanding and with an affection for sport. Children with myopia or with other ocular diseases are often different concerning their whole identity than peers therefore a differentiating pedagogy must be provided to them in their motor skills development as well. This is the most difficult of challenge pedagogy. Spectacled children have some more otherness than average but this is interesting and peculiar at the same time. Looking for a solution among the clusters of the above problems we should consult the researches of doctors as well as sharing theoretical knowledge.

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