

Final resolution of the 3rd Global Pediatric Congress, London 2018.

3rd Global Pediatric Congress notes the significant achievements of recent years in pediatric ophthalmology and considers it necessary to note the following.

1. Undoubtedly, one of the main urgent tasks in pediatric ophthalmology is the fight against the pandemic of adaptive myopia. By the year of 2050, up to 5 billion people will be affected by myopia, that's half of the world's population. This means that we do not yet have truly working and practically applicable theory of myopia. The most widespread theory of peripheral defocus is known for its shortcomings and is based on a number of hypotheses that are not fully supported by scientific research. In order to rely on the hypotheses proposed in this theory, it is necessary to carry out a number of fundamental physiological studies for their reliable confirmation. And we draw the attention of governments and private investors from all the countries to the necessity of funding such researches and trials.

2. Possibly, for the first time the metabolic theory of adaptive myopia, proposed by researchers from Russia, was announced in this congress. This metabolic theory is based on interrelated physiological hypotheses, which are well justified. In this theory, it has been shown that the physiological mechanisms of the emergence and development of adaptive myopia in animals and in human at working age are common. The acquired myopia is represented in this theory not as a disease, but as a normal natural adaptation process, which makes it possible to reduce the energy consumption of the eye during prolonged intensive work at near sight. These are manifestations of the general law of the anatomical development of biological systems - minimizing energy consumption for effective vital activity.

It is especially important to note that the metabolic theory of adaptive myopia has been reliably confirmed in clinical studies with observation periods of 3, 5 and 7 years. These studies are important for the theory and practice of optometry since the notion of "rational correction" is introduced. Rational correction allows to practically perform physiologically adequate optical correction, which not only effectively prevents the development of adaptive myopia, but also inhibits the development of other eye diseases. Owing to the fact that, these diseases are directly related to the deterioration of metabolic processes and/or accelerated by the aging of intraocular structures: first of all glaucoma, retinal and optic nerve degeneration, dry eye syndrome and others.

Practical recommendations on optical correction developed by Russian researchers, based on an understanding of the executive mechanisms of the metabolic theory of adaptive myopia, suggest the use of rational correction at the earliest stages of development of acquired myopia (if possible, it is necessary to inhibit the natural adaptation process at an early stage). In addition, rational correction should prevent the interrelated work of intraocular systems under the conditions of extreme phases of accommodation: the object is at the farthest distance and completely close. Such optical correction allows to exclude the work of the ciliary muscle in the maximal and minimal tone, ensuring an effective outflow of aqueous humor through the uveoscleral path, normalize the natural metabolic processes in the eye and ensure normal regeneration of the collagen in the sclera, including its posterior pole. In practice, this means physiological application of weak overcorrection when looking at distant objects (by 0.12-0.25 D) and a slight undercorrection when looking at objects located at near distance (0.25-0.5 D) with the correction for ortho- and exophoria.

3. An important achievement of the congress was a clear understanding of the need to develop and implement an effective control of video security in the visual environment in order to prevent not only the massive development of eye diseases, but also to exclude the negative influence of the modern visual environment on the functioning of many human life systems. Foremost, it is necessary to plan and accelerate interdisciplinary research to develop criteria for a comfortable visual environment when using artificial light sources, screens of modern TVs, displays and gadgets. It is necessary to pay attention to the increased emittance of blue lightwaves and the often insufficient component of red light. The general trend of safe illumination with semiconductor light sources and video-safe radiation from displays is the following: it is necessary to have a biologically adequate spectrum that will ensure balanced operation of the visual analyzer and the endocrine system. The Congress draws the attention of the heads of state and government to the need to fund government programs to develop national regulations on visual work, involving ophthalmologists and representatives of other scientific disciplines, specialists in the field of occupational health and safety.

4. The Congress notes the unquestionable importance and special prospects of scientific research in the field of "Physiology and Biomechanics of the Eye". These studies have already led to the adequate development of Helmholtz's lens accommodation theory, and also revealed many new additional accommodation mechanisms, gave them a detailed classification and described the executive mechanisms. Also, these studies have allowed getting deeper ideas about the possible physiological mechanisms of the interconnected functioning of the retina and cerebral neuronal fields for the implementation of the binocular vision, as well as the accommodation control system. Today, Russia is the leader in these interdisciplinary studies.

5. The Organizing Committee of the Congress expresses sincere gratitude to all participants of the Congress, speakers and moderators of scientific sessions, wishes creative success in the scientific rationale of safety criteria for the visual analyzer in the conditions of the modern light environment and display civilization therefore to effectively prevent and treat children's eye pathologies.

Organizing Committee of the Congress