PREVENTION - THERAPIES - REHABILITATION

LOW VISION CONGRESS 2024

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With international participation

ABSTRACT OF ORAL AND POSTER PRESENTATIONS

UNDER THE AUSPICES OF MEDICAL DEPARTMENT OF
ARISTOTLE UNIVERSITY OF THESSALONIKI

M.K PREMIUM LTD
CONGRESS AND SOCIAL EVENTS

Gene testing for congenital retinopathies. When is it advised and how to deal with the results!

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Purpose

To confirm or rule out inherited retinal dystrophies through gene testing. Through the genetic identification of the responsible gene we can in specific situations provide treatment and also help guide family planning.

Method

We studied cases with macular and retinal disorders associated with significantly reduced visual acuity and proceeded to genetic testing with the Next Generation Sequencing method.

Results

Pathogenic genetic variants involved in hereditary retinal dystrophies were detected and the molecular results were interpreted in collaboration with the Geneticist group.

Conclusions

The ophthalmologist's role in the management and diagnosis of genetic eye diseases can be critical for patients and their families. Genetic testing can determine the genetic background and inheritance pattern of a condition, and in certain cases even lead to its cure.

Low vision and cornea disease. Use of autologous serum as adjunctive therapy.

Apostolidou P.S., Mousiou F., Amperiades E., Papanikolaou N., Chatzizisis E., Sarafi A., Lioura A., Tsironi S.

Objectives:
Presentation of results from the therapeutic usage of autologous serum in patients with a variety of severe, vision-threatening keratopathies.

Methods:
Topical instillation of autologous serum was utilized as adjunctive treatment in patients with recurrent keratitis, corneal ulcers of septic or non-infectious etiology with our without endophthalmitis, traumatic keratitis, corneal defects with severe ocular surface disease, ocular burns.

Results:
All patients exhibited improvement both in objective clinical signs and in subjective symptoms.

Conclusion:
The usage of autologous serum appears to significantly contribute to the treatment of various severe keratopathies and can be utilized as an adjunctive approach to the standard therapeutic regime.

Eye and orbital injuries.

Theofilou G., MD, MSc

Eye and orbital injuries can range from minor irritations to severe trauma that can be vision threatening.

Method:
Search of the existing electronic scientific databases and relevant scientific books concerning the topic.

Purpose:
Analysis of injury demographics concerning age, sex, type of injury as well as treatment and preventive methods.

Results:
Men in their 30s are 5.5 times more commonly affected. Home and workplace are the most frequent locations. In the elderly, globe rupture is more common from falls and structural weakening of the eye.
In pediatric population, boys are most commonly affected (46.2%). Most of the incidents occurred indoors, during spring and were induced by sharp objects. Corneoscleral laceration is the most common, followed by iris laceration, uveal prolapse, hyphema, and cataracts.
Sports related ocular injuries are more common in collision and contact sports. Men are mostly affected (80%, average age 33 years old). Common injuries are hyphema, commotio retinae, corneal penetration, retinal detachment and foreign body. In children, ¾ of injuries affect boys (age groups 10 – 14 and 6 – 8 years old). Most common types are corneal abrasions, conjunctivitis and foreign body.

Conclusion:
Ocular and orbital injuries mainly affect men and boys and should be treated following proper guidelines. Prevention is very important and can be achieved by informing and educating the public. The use of protective equipment is mandatory. In case of sports, pre-participation eye examination and establishment of a national sports registry for eye injuries are recommended.

Chemical corneal injures.

Almaliotis D., Almpanidou S., Koliakos G., Gounari E., Pirounides D., Karampatakis V.

SUMMARY

This study evaluated the efficacy of mesenchymal stem cells (MSCs) to improve the effects of alkali burn of cornea. It was created corneal alkali burns in 30 rabbit eyes. The team with the MSCs (n = 15) was treated with intrastromal injection, subconjunctival injection of phosphate buffered saline (PBS) containing 2×106 MSCs as well as topical application. The control group (n = 15), was treated with PBS on the same modes of application. They have been instilled local eye drops (10% ascorbate, citrate 10%, tobramycin, dexamethasone, cyclogyl) for two weeks. The rabbits were examined under slit lamp, and assessed for neovascularization, opacity and epithelial defects of the cornea. Moreover, the tear secretion was assessed by tear test Schirmet test 1, and measurements were made for IOP (Intraocular pressure), hyperemia, toxic reaction. Furthermore, the concentration of SGPT (Serum Glutamic Pyruvic Transaminase) and VEGF (Vascular Endothelial Growth Factor) were measured and CCT (Corneal Touch Threshold). Also, an analysis of histological samples and immunohistochemistry were performed for the indicators: a-SMA, Ki-67 and FVIII factor.

The eyes of the group with MSCs showed greater recovery. The mean area of neovascularization was significantly lower in MSCs ($p < 0,05$). A significant difference in the degree of corneal opacity, re-epithelialization, and the IOP 21 and 28 posttraumatic days were also observed ($p < 0.05$). Histological shown that MSCs resulted in near normal architecture of the eye tissue. After injection of MSCs, SGPT levels and VEGF corneal decreased significantly. Immunohistochemistry revealed a reduction of a-SMA in the group of MSCs, with highest activity in mitotic-regenerating, by the presence of Ki67. It is worthy to note that the lower hyperemia at corneas, after MSCs treatment, it is approved by the presence of less blood vessels observed by electron microscopy (Coagulation factor-FVIII)

Unlocking the potential of stem/stromal cells in corneal neovascularization.

Pirounides D., Almaliotis D., Koliakos G., Karampatakis V.

Purpose:
To evaluate the anti-angiogenetic effects of adipose-derived mesenchymal stem/stromal cells (ADMSC), after injection, on corneal neovascularization in a rabbit model.

Methods:
32 New Zealand rabbits were randomly allocated into 2 groups. A corneal incision was created and sutured, inducing neovascularization. All eyes were treated with either phosphate-buffered saline (PBS) (control) or adipose-derived mesenchymal stem/stromal cells (ADMSC), administered via three different routes with intrastromal and subconjunctival injection and topical application. Following enucleation, the corneas were examined fourteen days after the incisions and evaluated for corneal neovascularization (CoNV). Furthermore, morphological evaluation of ocular sections and immunohistochemistry with anti-VEGF and anti-TNF-α antibodies was performed. Parametric statistical analyses conducted, comparing the area of neovascularization of treated and untreated eyes.

Results:
Although CoNV was noticed in both groups, the extent of neovascularized area in the ADMSC group was significantly restricted ($P < .01$). Histology demonstrated that ADMSC, adequately inhibit corneal neovascularization resulting in almost normal structure. Immunohistochemistry depicted that ADMSC injection, also reduced TNF-α cytokine secretion, downgrading inflammation. VEGF staining was intense in control eyes presenting corneal NV, whereas no capillaries were detected in ADMSC-treated corneas.

Conclusions:
This study indicates that topical administration of ADMSC may successfully limit injury-induced angiogenesis in an animal model and has potential for use in the control of corneal NV in vivo.

Prevalence of diabetic retinopathy.

Klapsidis I., Kapis P., Glynatsis M.

Diabetic retinopathy (DR) is a significant ocular complication of diabetes mellitus and a leading cause of preventable blindness among working-age adults.

Purpose:
This study investigates the latest research developments regarding the global prevalence of diabetic retinopathy.

Results:
In 2020, diabetic retinopathy (DR) affected 22.27% of diabetics globally, with 6.17% having vision-threatening DR (VTDR) and 4.07% clinically significant macular edema (CSME). DR prevalence in Europe is lower than global estimates, affecting 25% of type 2 and 50% of type 1 diabetics. In Greece, DR affects 38.7% of diabetics, with 20% having mild non-proliferative DR (NPDR), and 5% presenting with proliferative DR (PDR). Prevalence rates in Greece (34.8% for DR, 4.6% for DME) are similar to Italy, likely due to shared lifestyle and healthcare access

Conclusion:
The global burden of DR is expected to remain high through 2045. Epidemiological differences in DR may be influenced by socioeconomic status, lifestyle choices, healthcare access, and genetic factors

Applications of multipotent mesenchymal cells in diabetic retinopathy.

Almpanidou S., Goulas A.

Purpose:
Diabetic retinopathy is the leading cause of vision loss in working age adults and current therapeutic interventions are only limited to late-stage disease. In this study, we investigated stem cell-based treatments for diabetic retinopathy over the past 25 years.

Methods:
A filtered review of the literature was conducted using the PubMed search tool using terms related to stem cell-based interventions for diabetic retinopathy.

Results:
The relationship between endothelial progenitor cells and diabetic retinopathy and the prospects for treatment have gradually attracted the full attention of the scientific community. Some researchers have also used various animal models of retinal vascular diseases to confirm the potential of adipose tissue-derived stem cells to differentiate into stable retinal perivascular cells. Existing clinical trials are of low quality and insufficient evidence, and their results have not been widely accepted in clinical practice. Stem cell heterogeneity, cell trafficking, and effective colonization of stem cells in damaged tissues are still under investigation. Clinical trials investigating the therapeutic potential of pluripotent stem cells, retinal pigment epithelial cells, bone marrow mesenchymal stem cells, and endothelial progenitor cells are ongoing.

Conclusions:
Stem cell transplantation in patients with diabetic retinopathy still faces major challenges. Clinical trials investigating potential stem cell-based treatments for diabetic retinopathy are ongoing and high-quality clinical evidence is likely to emerge in the future to promote clinical translation.

Executive Functions in Children with Low Vision: Analysis and Prospective Approaches.

Penekeli G., Penekeli DM.

Introduction:
Executive functions (EF) are crucial for achieving educational and social success during childhood. This term encompasses a set of cognitive abilities such as planning, attention control, working memory, inhibition, and cognitive flexibility. The role of vision, or the lack thereof, in the development of EF during childhood is not well understood. Aspects of EF are often measured through visual tasks. Studying the development and integrity of EF in children with visual impairment (VI) can provide significant insights into the development of EF as well as their potential relationship with vision and non-visual senses.

Objective:
The aim of this study was to systematically review the development and pathology of EF in children with VI. Pediatric cataracts, albinism, nystagmus, and glaucoma are the most frequently cited ophthalmological conditions leading to VI in children, along with retinal conditions such as retinopathy of prematurity and optic nerve diseases such as optic atrophy. However, there are other ophthalmological conditions that can lead to VI in the pediatric population.

Methodology:
To achieve our objective, an extensive systematic review of the scientific literature was conducted, investigating research studies and publications discussing the impact of VI on children's EF. This review included studies available in electronic databases such as PubMed, Medline, Google Scholar, PsycINFO, Scopus, and ScienceDirect, as well as reference sections of previous reviews published between 2015 and 2024.

Results:
The review revealed significant differences across all domains of EF: children with VI consistently performed lower than children with typical vision on EF assessments. Children with VI also show deficits in higher-level visual processing skills, including visual attention and visual search, particularly when EF demands increase. Furthermore, the evaluation of the articles indicated that, despite the inevitable impact of vision on EF development, other factors must also be considered, such as the age of onset of VI, auditory attention and processing, orientation and mobility skills, brain structure changes, and intelligence function, all of which play an essential role in the smooth development of EF in children with VI.

Conclusions:
The development of EF in children with VI is as complex as in children with typical vision and cannot be explained by a single factor. Overall, this study underscores the importance of detecting and addressing VI in children, providing a framework for developing effective educational and intervention programs that aim to foster the development of EF in children with VI, thus laying a crucial foundation for their successful social and educational integration.

Reading – Distance Vision – Mobility and Low Vision.

Pantelatou D., Verykokkaki A., Karditsas S., Karageorgiadis L., Joon Hyung Y., Seon Ha B., Seung Hyeun L., Kyoung Woo K., Nam Ju M.

The topic is referred to reading, distance vision and mobility in patients with low vision. Low vision aids are devices for improving visual performance. Optician-Optometrists recommend the appropriate aids and guide the patients how to use them. Magnifiers, prismatic glasses, Galilei and Kepler telescopic systems are useful aids for reading. In addition, digital magnifiers, Acesight VR, ArxAI technology and mobile apps provide new opportunities for users such as higher magnification and contrast of letters and background and detailed description of an image by software. As for far vision, binocular glasses in conjunction with decreasing the distance, telescopic spectacle binocular, clip on over distance glasses, Galilei, Kepler and filters (UV450, UV511) are appropriate for increasing visual acuity, protecting from UV radiation. and helping patients have high contrast. Patients with macula degeneration, Stargardt Disease, or albinism with central vision loss need magnification to see by peripheral vision as opposed to patients with retinitis pigmentosa and glaucoma with peripheral vision loss that need diminution to see a larger part of the image. Regarding mobility, the patient can move safely starting walking in the house, later outside with guide if necessary. In case of visual impairment, the patient is referred to the Panhellenic Association for the Blind that provides personalized training with a white cane or a guide dog. In conclusion, low vision aids provide practical solutions to patient's daily living. Communication with Optician-Optometrist can help patient improve his quality of life, moving safely and keeping being sociable and productive.

Central Retinal Artery Occlusion in a eight year-old girl, due to a Patent Ductus Arteriosus: A Case Report.

Fanara P., Glynatsis N., Palassopoulou L., Konteli A., Glynatsis M.

Purpose

To present a case of a central retinal artery occlusion in an eight-year-old girl, attributed to an undiagnosed patent ductus arteriosus (PDA).

Method

An eight-year-old girl presented to the Emergency Department with acute onset vision loss in her left eye. Best-corrected visual acuity of OS was light perception, while OD was at 20/20. A sluggish direct reflex of the left pupil was reported, unaffected indirect reflex, normal IOP, and diffuse retinal edema with a prominent cherry-red spot in the macula. The patient was immediately put on oxygen supply, continuous local massages of the affected eye were performed, acetazolamide treatment was initiated with two 250 mg tablets per os, continuing with one tablet q.d., a 2% dorzolamide hydrochloride single drop t.i.d and trimetazidine dihydrochloride 20 mg t.i.d, methylprednisolone 20 mg/kg daily, and acetylsalicylic acid 100 mg q.d. The patient was admitted to the Department of Pediatrics in order to treat and diagnose the underlying condition.

Results

OCT of the left eye demonstrated the well-demarcated thickening of the inner retina in the acute phase of arterial occlusion at the macula area. Fluorescein angiography confirmed the diagnosis. A transthoracic echocardiogram revealed a PDA of approximately 1.5 mm. Despite intensive treatment, the patient's eyesight failed to improve.

Conclusions

Cases of central retinal artery occlusion may occur in patients with undiagnosed, small PDA, with only symptomatic treatment being available. While the patient had reported syncopic episodes in the past, they were attributed to psychological explanations and a transthoracic echocardiogram was not prescribed while the simple cardiological evaluation did not reveal the defect.

Myopic maculopathy in pediatric high myopia.

Prousali E.

Purpose:
In recent decades, prevalence of high myopia has increased. Myopic maculopathy is a complication of high myopia, which can cause irreversible blindness. We discuss current insights into development and progression of myopic maculopathy in children with high myopia.

Method:
Narrative review of the literature.

Results:
Classification of myopic maculopathy, including 4 categories and plus lesions, has been defined by the META-PM study group. Ocular structural characteristics associated with myopic maculopathy progression in children predominantly include growth of diffuse atrophy, newly discovered evidence of tessellated fundus, diffuse or patchy atrophy, and lacquer cracks. In addition, advancement of myopic maculopathy has been correlated with growth of parapapillary gamma zone, increased myopic refractive error, longer axial length, increased AL elongation, worse best-corrected visual acuity and more severe myopic maculopathy at baseline. Also, highly myopic children with peripapillary diffuse chorioretinal atrophy appear to be at an increased risk of developing pathologic myopia in the future. Furthermore, children with high myopia exhibit decreased macular thickness and less density of vessels in superficial and deep capillary plexuses with a wider foveal avascular zone compared to age-matched controls.

Conclusions:
Regular ocular examinations are warranted to identify and monitor myopic maculopathy. Studies with larger sample sizes and more follow up are needed to explore the risk factors and characteristics of progression of myopic maculopathy in highly myopic children, aiming to prevent blindness through appropriate clinical management.

Implementing silent reading speed and oculomotor indices as a clinical measure of functional vision in low vision patients.

Plainis S., Gleni A., Simos P., Tsilimbaris KM.

Purpose:
Visual acuity offers limited value as an endpoint for evaluating functional vision deficits in low vision patients. In this study eye movements during reading were recorded in clinical cases of patients of low vision, to provide surrogate indicators of silent reading performance and a primary outcome of visual function.

Methods:
Silent reading performance was assessed in low vision patients (visual acuity worse than 0.4 logMAR) with a range of ophthalmic pathologies, e.g amblyopia, glaucoma, Stargardt disease, optic neuropathy and Age-Related Macular Degeneration. Reading was evaluated using the Greek IReST reading passages, displayed at 40cm distance on a screen. Correction for near, if needed, was achieved with reading spectacles. Eye movements were recorded simultaneously during passage reading, using video oculography (Eye-Link II, SR Research Ltd). Data analysis included computation of reading speed, fixation duration, forward fixations and regressions. Frequency distributions of fixation durations were analysed with ex-Gaussian fittings.

Results:
Reading speed was found significantly impaired in all clinical cases. The strongest correlate of silent reading speed was the number of forward fixations, while correlations were also found with fixation duration, percentage of regressions and the ex-Gaussian parameter μ.

Conclusions:
Implementing eye movement-based measurements of silent reading in the clinical practice could provide valid indices of reading efficiency. Pending further clinical research, this approach could offer a reliable clinical measure of functional vision in low vision patients.

Oral vs. silent reading performance: a study using eye movement analysis.

Plainis S., Ktistakis E., Gleni A., Tsilimbaris KM., Simos P.

Purpose:
Since many daily activities rely on reading, a range of reading cards have been developed to evaluate reading performance. However, a significant inter/intra-individual variability in reading performance is observed due to the influence of several non-visual processes. Here we present an eye movement–based analysis to compare reading performance between oral and silent / comprehensive reading using passages from the Greek IReST set.

Methods:
eading performance of nineteen young adult volunteers (age: 27±4 yrs, 12 females) was evaluated binocularly with two reading passages, which belong to the same performance category of the Greek standardised IReST set. Participants read the texts displayed on a monitor (0.4 logMAR print size at 40cm distance) at two conditions: (a) aloud and as fast as fast as possible (oral), (b) silently and at a comfortable pace, while trying to comprehend it. Word-level reading efficiency was also assessed. Eye movements were recorded simultaneously during passage reading, using video oculography (Eye-Link II, SR Research Ltd). Data analysis included computation of reading speed, fixation duration, forward fixations and regressions. Frequency distributions of fixation durations were analysed with ex-Gaussian fittings.

Results:
Average reading speed was 203 wpm (SD=18) and 229 wpm (SD= 45) for the oral and the silent reading, respectively (mean difference:24 wpm, p=0.012). Correlation in reading speed between the two conditions was weak (r=.295, p=.072). The repeatability coefficient, RC (2*SD), was better in the oral (27 wpm) compared to the silent (47 wpm) condition. In the silent reading condition, average number of fixations was 1.00 (SD=0.13) fpw, with a RC of 0.14 fpw. Average fixation duration was 200ms (SD=20) with a RC of 20 ms. Average percentage of regressions was 14.0% (SD=6.1) with a RC of 6.9%. Silent reading speed was significantly correlated with the number of fixations (r=-0.83), fixation duration (r=-0.72) and ex-Gaussian parameter μ (r=-0.54).

Conclusions:
A weak correlation in passage reading speed is found between oral and silent / comprehensive reading. Complementary oculomotor indices could account for the systematic within and between subject variability in silent reading speed, resulting in a reliable outcome of visuo-motor vs. cognitive processing.

Study of the influence of factor PD-L1 on human lymphocytes

Kakavoulia M.-A., Samali Ch., Koliakos G

Abstract

PD-L1 is a transmembrane protein expressed in cells of hematopoietic origin that contributes to the suppression of the immune system through binding to the PD-1 receptor. In this study, the effect of exogenously added PD-L1 on activated lymphocyte proliferation is examined in vitro. The lymphocytes were isolated and cultured in RPMI nutrient medium, while their activation was achieved using FBS. In specific cultures, PD-L1 was added and then cell proliferation was measured by the Brdu method. According to the results, a decrease in lymphocyte proliferation was observed, confirming that PD-L1 affects the immune response. These findings form the basis for future research that may be associated with allergic reactions and autoimmune diseases.

Concerns and priorities of families with children with visual and multiple disabilities through the "Routines – Based Interview".

Miliou A., Kartasidou L.

This study, conducted as part of the postgraduate program «Master of Arts in Education: Special Education» at the University of Macedonia, implemented the Routines Based Interview (RBI) with 12 families of infants and toddlers with visual and multiple disabilities from the SYZOI Association. The aim of the research was to explore the families' concerns and priorities through the RBI and to describe the routines of both the child and the family that impact the family's functionality. RBI is a semi-structured interview designed to help families decide on their plans and goals, provide a rich and detailed description of child and family functioning, and develop a positive relationship between the family and the early intervention professional. The thematic analysis of the interview data revealed that the child's health, communication with the child, sibling relationships and the mothers' separation anxiety due to returning to work were key concerns and priorities for families. Additionally, the difficulties and concerns families face in their children's daily routines were highlighted. Feeding, free time, sleeping and bathing routines were sources of anxiety for many families. The current study highlights the importance of using tools like RBI to understand family concerns and design tailored interventions, emphasizing the significance of integrating interventions into family routines and beliefs, as well as the necessity for professionals to understand the challenges these families face.

Retinitis pigmentosa and low vision: The progression of the disease and compatibilitites.

Mousiou F., Apostolidou P.S., Amperiades E., Papanikolaou N., Psimenidou E., Lioura-Sofronidou A., Tsironi S.

Objectives:

The incidence of low vision in patients with Retinitis Pigmentosa throughout the disease's progress and upon manifestation of ocular co-morbidities.

Methods:

Retinitis Pigmentosa is a mostly inherited ocular disease leading to progressive visual loss. The standard phenotype of the disease consists of peripheral visual loss and nyctalopia. However, many RP patients exhibit posterior subcapsular cataract and glaucoma, conditions that can impact central vision in earlier stages. Involvement of the macula either due to progression of RP or manifestation of age-related macular degeneration has a detrimental effect on the patient's maximal visual function.

Results:

Patients with RP should be thoroughly educated regarding the symptoms and the disease's progression in earlier stages. Timely and regular outpatient review facilitates the patient-doctor relationship and promotes proper counselling and detection of treatable complications. Frequent examination of visual fields as a potent prognostic factor is of outmost importance, because the patient might not become aware of potential disturbance in orientation and spatial perception. Cataract surgery, intraocular pressure and frequent review for macular disease can be instrumental in effect on the patient's central vision.

Conclusions:

Retinitis Pigmentosa is a severe, degenerative disease of the retina, which oftens co-exists with other ophthalmic conditions. Low vision support should be comprehensive in order to facilitate the patient's independence and daily life.

Promoting Reciprocal Interactions Between Mothers and Their Children with Visual Impairment and Additional Disabilities: A Bodily-Tactile Early Intervention Model.

Sini Peltokorpi, Saara Salo, Paul Hart, Anne Nafstad, Minna Laakso

Background:
In early interactions, children with visual impairment and additional disabilities (VIAD) may not perceive their parents' facial and gestural expressions. Likewise, parents may not detect their children's atypical expressions. These challenges could compromise children's communication development and emotional availability (EA) to their parents.

Purpose:
This multiple case study investigated the effects of bodily-tactile early intervention on four one-year-old children with VIAD and their mothers. The home-based early intervention consisted of eight sessions.

Method:
The video data from baseline, intervention, and follow-up sessions were analyzed using the Bodily-Tactile Coding Procedure, Multimodal Conversation Analysis, and EA Scales.

Results:
The mothers increased their use of the bodily-tactile modality in early social play routines and communication. Interactions between the mothers and their children with VIAD were more reciprocal during the early intervention. One child developed referential gestures based on his bodily-tactile play experiences. The children with VIAD showed higher EA during the intervention.

Conclusions:
Bodily-tactile early intervention may increase the quality of early interactions between children with VIAD and their mothers.

Exercise programs for glaucoma patients.

Theofilou G., MD, MSc

Purpose:
The purpose of this work is the comparative analysis of studies on the influence of exercise programs on intraocular pressure.

Method:
The collection of scientific data was done by searching scientific books, electronic databases such as MEDLINE, Embase, PsychInfo, HealthStar, National Library of Medicine (PubMed), Cohrane and Scopus.

Results:
It has been found that aerobic exercise programs are indicated for glaucoma patients, exercise programs that involve vibrations should be avoided in patients with pigment dispersion syndrome, and special care should be taken in sports that require the use of a mask, as the use of the mask increases the IOP. In terms of technique, it has been found that glaucoma patients should avoid activities that hold the breath and head-down positions if their exercise program includes yoga.

Conclusion:
In conclusion, resistance programs and isometric exercises should be avoided for glaucoma patients. Breathing rate, head-down positions and using of mask while training should be taken under consideration. Also, for pigment dispersion syndrome, high-impact exercise programs, such as jogging, should be avoided.

Ocular Toxoplasmosis in an immunocompetent 19-year-old female.

Zartaloudi M., Almpanidou S., Lalias Th., Anastasilakis K., Mirachtsis Th.

Purpose:
To present a case of an immunocompetent 19-year-old-female presented with retinal chorioretinitis caused by Toxoplasma gondii infection.

Results:
Case presentation: A 19-year-old female presented at the Emergency Department of 424 General Military Training Hospital of Thessaloniki with photophobia, sudden onset of floaters and decrease in visual acuity of the right eye. The ophthalmological examination revealed best corrected visual acuity of the right eye 9/10 and the left eye 10/10. The intraocular pressure was 18 mmHg and 21 mmHg, respectively. At the slit lamp examination, the patient had corneal endothelium deposits and mild iridocyclitis in the anterior chamber. During fundoscopy of the right eye, a typical "satellite" lesion was detected with two small foci located1 disc diameter nasally from the optic nerve. The patient denied trauma or immunodeficiency and reported a viral respiratory infection 15 days before the onset of ocular manifestations. The patient was closely monitored with fundus photography and optical coherence tomography. Under the guidance of infectious disease specialists, special serology examinations were conducted with toxoplasma gondii serology being positive (IgG+/IgM−). Furthermore, computer tomography scan did not reveal any signs of cerebral infection. The patient was hospitalized and treated topically with dexamethasone and cyclopentolate hydrochloride in the affected eye as well as with per os sulfamethoxazole -trimethoprim b.id., methylprednisolone t.id, and clindamycin (1×4) of which gradually the doses were reduced. One week later, visual acuity of the right eye was 10/10, retinal lesions were significantly improved as well as the iridocyclitis and vitritis. In four weeks' time, the patient was fully recovered from toxoplasmosis.

Conclusions:
Toxoplasma gondii can affect the retina, threatening visual function, especially when lesions are localized near the optic nerve or the macula. In such cases, cooperation with other specialties is also very crucial (epidemiologists). Thus, vigorous diagnosis and treatment are necessary to reduce the disease impact and recurrence rate even in young immunocompetent individuals.

Visuomotor behavior of top-level athletes: Evaluation and intervention.

Chatzinikolaou K., Lola A., Hatzitaki V., Stavropoulou G., Grouios G.

Visuomotor behavior, both as a perceptual and cognitive process as well as a motor expression, is a significant parameter in high-performance sports.
This study investigates certain visuomotor skills of elite athletes under the lens of varying conditions dictated by the nature of different sports.
Additionally, it presents the use of advanced technological 'tools' in the modern study and evaluation of athletes' visuomotor behavior in various field-related visuomotor tasks.
Finally, it highlights and recommends targeted intervention strategies for enhancing visuomotor behavior in high-performance sports.
The content of the presentation is relevant to and interests both high-level athletes and scientists working in various fields, such as eye and vision disorders, perceptual, cognitive, and sports psychology, and motor behavior.

Prevalence of low vision.

Talimtzi P., Albanidou S., Nikolaidou A., Hatzimbalis Th.

Low vision is a significant global issue, affecting millions of people across different regions and age groups. According to WHO and the International Classification of Diseases 11 (2018), vision impairment is divided into two main categories based on visual acuity (VA): distance and near presenting vision impairment. Distance vision impairment includes mild (6/18<VA<6/12), moderate (6/60<VA<6/18), and severe (3/60<VA<6/60) vision problems, as well as blindness (VA<3/60). Near vision impairment is characterized by VA worse than N6 or M.08 at a distance of 40 cm. Low vision generally refers to moderate to severe visual impairment.

The primary causes of low vision can be categorized into reversible and irreversible conditions. Reversible causes include uncorrected refractive errors, such as myopia and hyperopia, and cataracts, which are more prevalent in low- and middle-income countries. On the other hand, irreversible causes include age-related macular degeneration (AMD), glaucoma, and diabetic retinopathy (DR), which are the most common causes of permanent vision loss in high-income countries. Other causes include inherited retinal diseases, retinal vein/artery occlusion, optic neuropathies, and maculopathies, which are less common but still significant contributors to low vision.

According to data from Vision Atlas (2020), 1.1 billion people are affected by some form of vision loss, of whom 295 million people (26.68%) experience moderate to severe vision impairment (low vision). AMD is the leading cause of irreversible vision loss in high-income countries and accounts for 2.11% of all low vision cases. Glaucoma affects 1.4% of people with low vision, while diabetic retinopathy contributes to 1.11% of cases.

The prevalence of low vision varies across regions, with some areas experiencing a higher burden than others. In high-income countries, 2.81% of the population is affected by low vision. Sub-Saharan Africa has a prevalence rate of 1.85%, Latin America and the Caribbean 2.21%, North Africa and the Middle East 1.97%, and Central Europe, Eastern Europe, and Central Asia 1.62%. The highest rates of low vision are seen in Southeast Asia, East Asia, and Oceania, where the prevalence is 7.51%, and in South Asia, where it reaches 8.70%. These regional inequalities underline the importance of targeted public health interventions to address the specific needs of different populations. In Greece, approximately 717,000 people live with vision loss, and 303,000 of them are affected by low vision. Notably, 75% of those are over the age of 50, and 56% are women.

Vision loss is projected to increase substantially over the coming decades. By 2050, the number of people with vision loss is expected to rise by 55%, increasing the total affected population by 600 million people. Specifically, the population with low vision is anticipated to grow by 73%, increasing from 295 million in 2020 to 474 million by 2050. Therefore, the demand for vision care services is expected to increase, making it essential for health systems worldwide to invest in preventive care, early detection, and management strategies to reduce the burden of low vision and vision loss in general.

Comparative release of growth factors from PRP, S-PRF vs C-PRF vs L-PRF

Leliopoulou A., Niti A., Koliakos G.

INTRODUCTION:
The utilization of platelet concentrates arose from the discovery that platelets themselves function as key regulators in the wound healing process. They have gained tremendous potential as a regenerative agent derived from autologous sources capable of stimulating tissue regeneration in various medical fields.

PURPOSE:
The purpose of this comparative study was to compare four different protocols for the production of platelet concentrates based on the release of the growth factors VGEF and PDGF-AB. PRP (Platelet-Rich Plasma) according to the bibliography seems to maintains the lead in the wider field, so this study gives an alternative option to the use of PRF (Platelet-Rich-Fibrin) which is more recent and newer and it seems that in the future it will be a game changer.

MATERIALS AND METHOD:
A total of 80 samples were collected from 20 volunteers. In each person, 4 blood draws were performed, each corresponding to the protocols that followed. Thus, for each patient, one PRP was performed from the blood sample stored in the vial with anticoagulant and 3 PRFs, more specifically one C-PRF, one S-PRF and one L-PRF, which were derived from the blood samples stored in the vials without anticoagulant and were produced following the protocols with different centrifugations every time. The samples were frozen at -80°C until the time of analysis. They were then thawed and tested for their concentration in growth factors VGEF and PDGF-AB by the ELISA Sandwich method.

RESULTS:
The results of the current investigation showed the superiority of the C-PRF protocol over PRP, which came second in line, based on the release of the two growth factors. The S-PRF and L-PRF protocols appeared with the lowest concentrations of growth factors with little difference between them. In addition, the concentration of PDGF-AB compared to VGEF was almost triple in the final results.

CONCLUSION:
In summary, it appears that different platelet concentrates show significant differences in the release of growth factors. This study highlights the C-PRF protocol as the most efficient of the rest, in the first minutes after their preparation, based on the growth factors studied. It is expected that comparative studies will be carried out that will involve a larger range of growth factors, in a larger number of volunteers also studying the release at different times from the moment of their preparation, so that the comparison between them becomes more thorough.