

3rd International Conference and Expo on

Optometry & Vision Science

October 08-09, 2018 | Edinburgh, Scotland

Neuro-optometric rehabilitation of Mild Traumatic Brain Injury (mTBI)

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Mild Traumatic Brain Injury (mTBI) is by definition a complex pathophysiological process affecting the brain, induced by biomechanical forces. It is an injury to the brain resulting in three categories of symptoms: physical/somatic, e.g. headache, vision, GI disturbance; cognitive, e.g. attention, memory and; psychiatric, e.g. mood swing, personality changes. Most of these symptoms should get better within 2–3 weeks of total rest (sometimes more) barring any second impact syndrome. A concussion lasting less than 30 minutes with a Glasgow coma scale (GCS 13–15) is considered mTBI. It can result in temporary or permanent neurological symptoms. Neuro-imaging tests such as CT scan or MRI may or may not show evidence of any damage. High school football accounts for 47% of all reported sports concussions, followed by ice hockey and soccer. An mTBI accounted 82% of the 340,000 cases of blast injuries in the US military between 2000 and 2015. Highlights of clinical vision and perception examination and rehabilitation of the mTBI patients include the following: thorough history, correction of small errors, out of instrument subjective examination, contrast sensitivity and glare assessment, monocular, bi-ocular and binocular accommodative facility, vergences, saccades and fusional ranges. Treating patients with equipment that offers visual, vestibular and proprioceptive abilities will provide the best outcome. Devices and methods tapping multisensory system and featuring feedback with proprioceptive and balance capability are essential for office and home. That is because the main goals of rehabilitation are endurance, integration and internalization of learned skills for lasting long term benefits and avoiding regression after therapy. Keep in mind the three phases of neuro-optometric rehabilitation: visual stabilization: postural/peripheral awareness, monocular skills; binocular vision integration: oculomotor/accommodative, convergence, stereopsis, localization–static and dynamic; visual automaticity: multisensory integration.

Recent Publications:

1. Capó-Aponte J E, Jorgensen-Wagers K L, Sosa J A, et al. (2017) Visual dysfunctions at different stages after blast and non-blast mild traumatic brain injury. *Optom Vis Sci.* 94:7–15.
2. Armstrong R A, McKee A C and Cairns N J (2017) Pathology of the superior colliculus in chronic traumatic encephalopathy. *Optom Vis Sci.* 94:32–42.
3. Poltavski D, Lederer P and Cox L K (2017) Visually evoked potential markers of concussion history in patients with convergence insufficiency. *Optom and Vision Science* 94(7):742–750.
4. Eisenberg MA, Meehan WP and Mannix R (2014) Duration and course of post-concussive symptoms. *Pediatrics* 133(6):999–1006.
5. PR and Berkovic SF (2011) Concussion: The history of clinical and pathophysiological concepts and misconceptions. *Neurology* 57(12):2283–2289.

Biography

Joseph Hallak is an Optometrist. He was a Founder and Chairman of a continuing education study group and Director of the Contact Lens and Low Vision Clinics. Hallak is an adjunct Assistant Clinical Professor, the State University of New York, College of Optometry and Adjunct Clinical supervisory faculty, the New England College of Optometry and Salus University. He is a contributing editor to Primary Care Optometry News. He is a member of certain Optometry societies.

Jeffrey Becker is a graduate of the Pennsylvania State University and graduated from The Illinois College of Optometry. He has been a practicing Optometrist in Northeastern Pennsylvania for over 34 years, with a specialty practice in Rehabilitative Optometry. Becker is an adjunct faculty member at Misericordia University, Dallas. He examined and treated over 3000 head injury, stroke, and neurologically impaired patients ranging in ages from birth to senior citizens. Becker recently accepted an appointment by Governor Wolfe to be a board member on the State board of Optometry in 2017.