

Optometric Issues in the Treatment of the Concussed MLB Player

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Philadelphia Phillies



Philadelphia Phillies



**With help of many, Tommy Joseph's
MLB dream came into focus**

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Optometric Affectation

- Disturbances to the visual system secondary to concussion is known as Post Trauma Vision Syndrome
- Common disturbances with PTVS:
 - Tear Film Integrity
 - Distorted clarity or gritty sensation varies with blinking
 - Light Dark Adaptation
 - Light Sensitivity

Optometric Affectation

- Common disturbances with PTVS :
 - Visual Field Integrity
 - Loss of portion of visual field
 - Accommodation
 - Constant or transient blur

Optometric Conditions

- Optometric Issues
 - Convergence Insufficiency
 - Important for reading
 - Inability to use two eyes together as a team
 - Oculomotor Dysfunction
 - Permits accurate visual scanning and exploration
 - Important for reading and copying from board
 - Inability for eyes to together track a moving target and switch fixation from one target to another

Optometric Conditions

- Optometric Issues
 - Accommodative Infacility
 - Important for academic efficiency and comfort to focus on an object – i.e. copy from blackboard
 - Inability to allow rapid and accurate shifts of attention from one distance to another with instantaneous clarity
 - Inability to allow student to maintain focus at reading distance

Optometric Conditions

- Optometric Issues
 - Visual Intake-Visual Memory
 - Allows for optimal academic and athletic performance as affects proficiency in reading comprehension and spelling
 - Inability to obtain maximum visual information in the shortest possible time
 - Inability to retain this information over an adequate period of time

Optometric Conditions

- Optometric Issues
 - Visual Motor Integration Deficit
 - Inability to analyze a visual stimulus, integrate that information with other systems, and produce a motor response (inappropriate eye-hand coordination)
 - Needed to produce written language
 - Fusional Instability
 - Inappropriate binocular function
 - Needed for near and distant visual tasks
 - Cause of blur or double vision

UPMC Symptom Categorization

- Ocular
 - Ability of optometric system to work appropriately
 - Are vergence and divergence, smooth pursuits, saccades, accommodation, convergence, VOR and VOR cancellation appropriate

VOMS Physician Examination

1. Smooth Pursuit – Extra-ocular Muscle Testing
2. Saccades Testing
 - Point to Point Discrimination in horizontal and vertical planes (Fingers 12 inches apart and patient looks between them for 15 seconds.)
 - Look for latency of onset, speed, accuracy and conjugate movement. Test failure is delayed, inaccurate saccades or disconjugate eye movement.

VOMS Physician Examination

3. Vestibulo-Ocular Reflex (VOR) – Gaze Stability

- Ability to focus on stationary object while moving head without blurriness or dizziness
- Do with examiner finger stationary and patient moving head side to side while fixating on stationary finger
- Test in horizontal and vertical plane for 15 seconds
- Look for inability to hold focus
- With provocation, see decline in visual motor speed and reaction time

VOMS Physician Examination

4. Visual Motion Sensitivity (VOR Cancellation)

- Response to optokinetic stimulation
- Patient focus on thumb as moves side to side following own thumb
- Look for inability to follow fixated object
- With provocation, see decline in visual motor speed and reaction time

VOMS Physician Examination

5. Near Point Convergence Dysfunction Test

- Focus on writing on pen 6 cm from nose bridge

Look for diplopia at greater than 6 cm

6. Test of Near Point Accommodation

- Cover one eye
- Bring object to face
- Should accommodate – see clear at 15 cm
- Can fatigue system by bringing closer

Consider use of King Devick Test

Ocular Symptomatology

- 42 to 69 % of patients report this (CAN BE PRE-EXISTING)
- Frontal headache, tired behind eyes
- Problems in math and science
- End of day fatigue
- See issues with near point convergence, accommodation, pursuits, saccades on VOMS
- See decrease in verbal memory, visual motor speed composite and reaction time on computer neuropsychological testing
- Problem is in encoding not retrieval

Ocular Symptomatology

- Ocular
 - Treatment
 - Vestibular Therapy
 - Vision Therapy – may have to do visual therapy before vestibular if extremely symptomatic
 - Can be done in office or at home
 - May involve spectacle use and/or computers
 - Exertion Therapy
 - ? Treatment for stress/anxiety

Visual Treatment

- Treatment Modalities
 - Anti-refractive coating and corrective lenses
 - Correcting prism
 - High convergence excess
 - Vertical deviations
 - Fixation disparities
 - Selective Occlusions

Visual Treatment

- Treatment Modalities
 - Yoked Prism
 - Visual Midline Shift Syndrome
 - Progressive Supra Nuclear Palsy
 - Visual Field Defects
 - Certain Visual Perceptual Processing Defects
 - Ocular Motion Restriction

Visual Treatment

- Treatment Modalities
 - True Optometric Rehabilitation
 - Improve convergence and eye teaming abilities
 - Improve accommodative ability
 - Improve visual tracking skills
 - Improve short term visual memory
 - Done via intra office exercises using charting, tracking and computers and can also be then transferred to home computer

Thank You

