

AMERICAN ACADEMY  
of OPTOMETRY

## The Diagnosis and Treatment of Visual Disorders in a Population of Professional Athletes Post- Concussion

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ACADEMY 2012  
PHOENIX

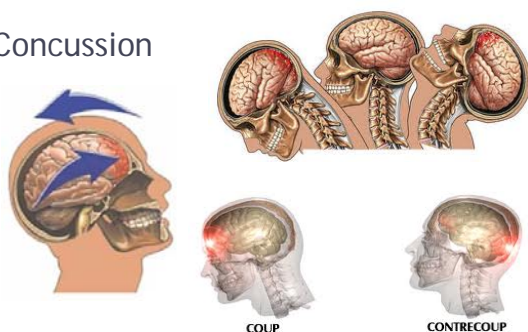
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## Optometry & Visual Rehabilitation

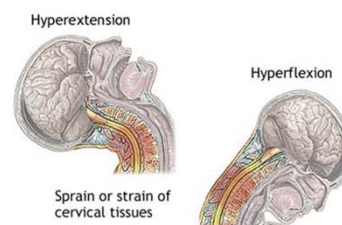
- Types of injuries
  - Concussion
  - Whiplash



## Concussion



## Whiplash



## Whiplash

- An injury on ice feels like a car accident
- Sports therapists say that hockey players who suffer from head and neck injuries including whiplash after a collision on the ice need the same medical attention as somebody who has just had a car accident.

## Whiplash

- Ice hockey players can reach speeds of more than 40km an hour when they're skating and as high as 24km an hour when they're sliding on the ice. The impact of colliding with another player or hitting the boards of the rink can be compared to a low-speed road traffic accident.

## Whiplash



## NHL Careers Cut Short by Concussions

- **Pat LaFontaine**
- Eric Lindros
- Steve Moore
- Adam Deadmarsh
- Scott Stevens
- Keith Primeau
- Dean Chynoweth
- Dennis Vaske
- Mike Richter



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## Sidney Crosby - Pittsburgh Penguins



## The hit on Crosby

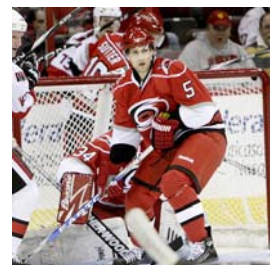


## Some Hockey Hits set to Metallica



## Case Report of Brian Pothier

Washington Capitals Defenseman



## Referred by Sue Durham, OD

- Concussion 1/3/2008 against the Bruins
- A series of phone calls & emails
  - Sue Durham, OD
  - John Rizos, MD Head Physician, NHL Players' Association
  - Jim Kelly, MD Head Neurologist, NHL Players' Association

## Key Points

- Hadn't played in 14 months – post 4<sup>th</sup> known (recorded) concussion
- Caps playing well with Ovechkin
- Motion sickness
- Could not tolerate fluorescent lights
- Could not be in big open spaces
- Guarded movements
- No eye movement free of head
- No head movements free of body



## Testing

- Chair tests
- Analytical
- Cheirosopic tracing
- Van Orden stars
- Tachistoscope digits
- Brock String
- Wayne Saccadic Fixator: pro-action, reaction, near-far
- King-Devick
- Groffman Visual Tracing

## Impressions

- Speech normal in every way and fast
- Most testing looked normal to above average
- Key points were seen in the guarded movements
- Key Goal: Get eyes moving and head moving again naturally.

## VT

- Due to travel he had extended sessions in the office one-on-one with me.
- Eye Control
- CP Saccades
- Flashlight Pointing
- Greenwald Eye Movement

## Results

- 6 sessions of VT done
  - After 2 – could begin physical conditioning
  - After 4 – got clearance to begin skating again
  - After 6 – March 4, 2009 played rehab games with the Hershey Bears
  - March 16, 2009 1<sup>st</sup> NHL game in 14 months
  - March 31, 2009 Scored first goal since coming back.

## Pothier Scores



## Case Report of Mike Smith

Tampa Bay Lightning Goaltender  
Phoenix Coyotes Goaltender



## Case Report of Bryce Salvador

NJ Devils Defenseman



Jim Kelly, MD  
National Intrepid Center of Excellence



## Past History

- What happened prior?
- Entering Symptoms

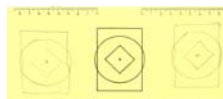


## Diagnosis

- Over-minused
  - -4.00 OD and -4.50 OS glasses
  - 20/20 OD/OS/OU at Distance
- Left the first VT session wearing
  - -3.00 OD and -3.25 OS contact lenses
  - 20/15 OD/OS/OU at Distance

## Diagnosis

- Vertical Misalignment
- Complained about a previous head tilt
  - Worked on Vestibular system to straighten out
  - Adjusted for the head tilt by “bending” glasses
- Measured 1 prism diopter vertical phoria
  - Chiroscopic Tracing
  - Van Orden Star



## Diagnosis

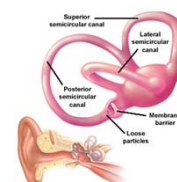
- Convergence
  - Jumping from Nose to Wolff Wand
  - OD arrives first
  - OS arrives jumping and 1 second later
- Pursuits
  - Slow pursuit movements were smooth
  - Fast pursuit movements were choppy
    - Neurological problem with pursuits?
    - Decreases volume and predictive cuts out?

## Goal

- Eyes on Easy
  - Relaxed eyes and body
  - Decreased tension relaxes vision
  - Reduced prescription
  - Take in the “Whole Picture”
    - Increase the volume of vision
    - Don't cut out peripheral when focusing

## Therapy

- Near/Far Rock
  - Relaxed Eyes
  - Extended range throughout session
- Greenwald Eye Movement
  - Moving Eyes (Fixed Head)
  - Moving Head (Fixed Eyes)
  - Head Placement with Semicircular canals
    - Straight Ahead
    - 60° upward
    - Laying on back looking up



## Therapy

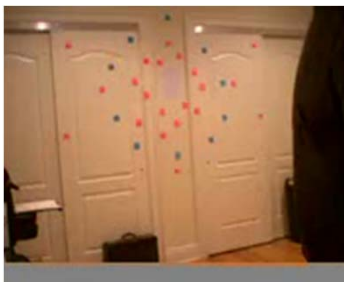
- **Eye Control**
  - Follow Wolff wand with both eyes
  - Maintain correct body posture
    - No body sway
    - No head movement
  - Procedures
    - Done in front of mirror
    - Done with 120 BPM metronome

## Therapy

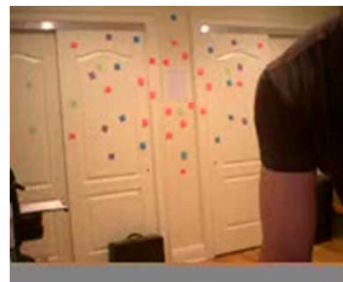
- **Brock String**
  - Bead Jump, Convergence, Divergence
  - Different angles to stimulate different response
- **Flashlight Pointing**
  - Eyes on Easy
  - Focus on detail while seeing big picture
  - Work up to
    - Metronome
    - Multiple flashlights
    - Balancing



## Flashlight Pointing



## With Distractions



## Salvador has a career year



## Take Home Message

- Optometry Vision Therapy for ABI/TBI can be effective in helping to bring *some* top level athletes back to peak levels of performance even after sustained potentially career ending injuries.

Thank You

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