Navigating Visual Dysfunction: A Multifaceted Approach (Part 2)

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Disclosure

- Marnie Deardorff has no relevant financial or nonfinancial relationships to disclose
- Laura Lizotte has no relevant financial or nonfinancial relationships to disclose
- Lauren Mazel has no relevant financial or nonfinancial relationships to disclose

Objectives

Participants will be able to:

- Identify the process for collaboration with ophthalmology/optometry for treating visual dysfunction following concussion
- Identify common return-to-work recommendations for patients with visual dysfunction following concussion
- Identify common return-to-school recommendations for patients with visual dysfunction following concussion
- Identify treatment techniques to address impairments with ocular motor skills, binocular vision, accommodation, and visual processing with hands on practice.

Navigating Visual Dysfunction: Part 2

- Ophthalmology/Optometry
- Work Accommodations
- School Accommodations
- Lab
- Case Examples
- Questions

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Ophthalmology MD

Physician who specializes in the medical and surgical care of eyes, visual system and in the prevention of eye disease and injury.

Specialty

Neuro- Ophthalmology

Recommend referral for:

Structural damage and eye health issues

New onset of floaters

Flashes of light

Impaired visual fields

Impaired EOM

Cranial nerve damage

Optometry OD

Healthcare professional who provides primary vision care. Also, provides low vision rehabilitation, vision therapy, visual processing, binocular vision assessment and prescribes prisms if appropriate.

Specialty Certifications:

“FAAO” “F/COVD”

Recommend referral for:

Binocular vision assessment

Accommodation assessment

Ocular motor assessment

Evaluation for prism lenses/tinted lenses

Visual Acuity assessment

Example of Optometry Rec's

- Diagnoses: Post Concussion Syndrome, Convergence Insufficiency, Accommodative Insufficiency, Mixed Astigmatism
  - Using glasses all of the time at work and at home.
  - Continue vision exercises with occupational therapy for convergence insufficiency and accommodative insufficiency
  - Brock String, bug on a string, barrel card, distance Hart chart minus lens dips, monocular near/far Hart chart, eye-hand coordination training
- Recommend tinted lenses and transition lenses for light sensitivity

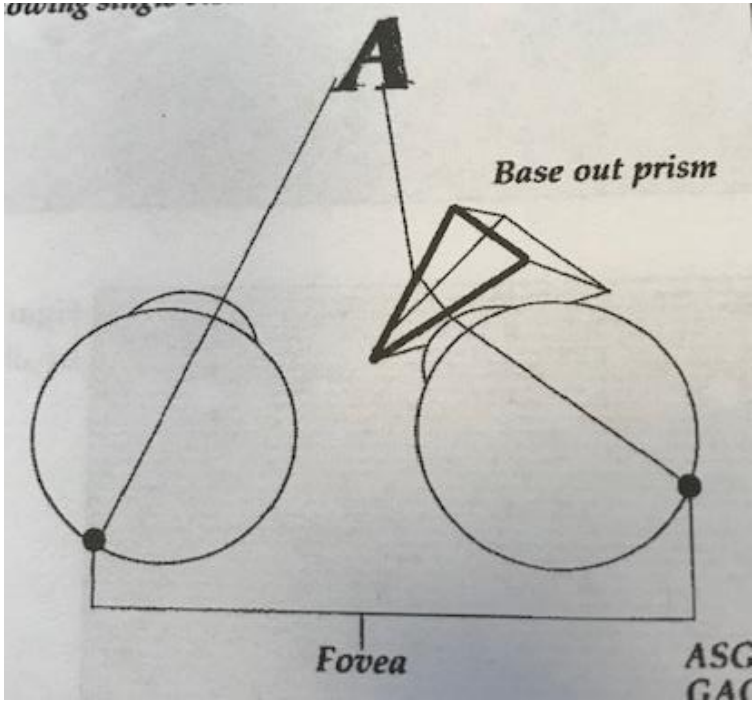
Example of Optometry Rec's (cont.)

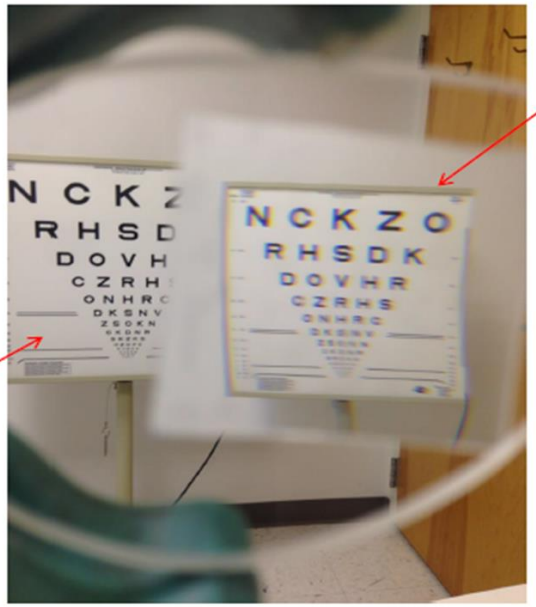
Specific Diagnoses:

Convergence insufficiency (H51.11)

Saccadic Eye Movement Dysfunction (H55.81)

"*I strongly encourage patient to continue with her current therapies as directed at the Cantu Concussion Center. Modifications to her eye exercises were shown to help meet patient at her current level of ability. Should she need additional help with her vision skills following her other therapies, vision therapy or possibly remote sessions with our office can be added.*"


A
Base out prism
Fovea


Prism
View
Actual
View
N C K Z O
R H S D K
D O V H R
C Z R H S

Other Considerations

Visual Co-Morbidities

- Premorbid visual function
  - Strabismus
  - Cataracts
  - Suppression
  - Amblyopia
- Dry eyes
  - Leading cause of light sensitivity in general population
- Age related changes
  - Reduced dynamic visual acuity (aging vestibular system)
  - Decreased contrast sensitivity
  - Color discrimination - especially in the dark

Other Co-Morbidities

- History of anxiety, depression, sleep disturbance, and migraines may also need to be treated and can impact recovery
- Medication Side Effects
  - Example: Photophobia is one of the most common side effects of medications used to treat seizures and depression
- Vestibular dysfunction
- Learning difficulties (dyslexia, ADD/ADHD)

Navigating Visual Dysfunction: Part 2

- Ophthalmology/Optometry
- **Work Accommodations**
- School Accommodations
- Lab
- Case Examples
- Questions

Work Accommodations

- **Symptoms can impact a person's ability to participate in various aspects of work:**

  Computer/Reading tasks

  Physical demands/work environment

  Cognitive demands

  Ability to attend meetings and communication via telephone and email

The Return to Work Process

- Evaluation and formulation of individualized care incorporating education, therapeutic tasks and functional training while using graded return approach
- Collaboration with team establishing return to work plan and appropriate accommodations
- Return to work with modified schedule and accommodations, gradually increasing hours/responsibilities, then fading out accommodations

Work Accommodations

- **Reading and computer modifications**
- **Physical Environment**
  - Ergonomics
  - Lighting
  - Noise
- **Task analysis and modification of technique**
- **Symptom management**

Demands of the work environment	Deficits from concussion impacting performance	Examples of modifications to assist
Screens- PowerPoint, Excel, tablet, computer screen, emails	Screen/light sensitivity and sensitivity to high contrast material	Use of color filters, tinted lenses, blue blocking software, line guide software, large font, shading, voice-to-text software
Reading	Ocular motor, binocular vision and focusing flexibility deficits	Use of large font, colored paper/filters/tinted lenses, tilted surface, line guides, blocking strategies
Environment- work space set-up/physical demands	Noise, light, glare and movement sensitivities	Allow for re-arranging of work space (desk moved to face blank wall, away from window), side/back lighting, ear plugs, hat/visor, fluorescent light covers, set-up to limit need for turning/head movements, work from home
Attendance to meetings	Noise, light, glare, focusing flexibility issues and movement sensitivities	Only attend essential meetings, call into meetings, preferred seating, use of ear plugs, hat/visor/tinted lenses, printed copy of agenda/meeting minutes

Incorporate preventive and restorative rest breaks throughout day

Examples

- **Teacher**
  - Provide time for observation hours, reduced hours/classes
  - Provide extra help in classroom
  - Change lighting (fluorescent lights off or fluorescent light coverings)
  - Use of color filters/tinted lenses, hat/visor, ear plugs
  - Print handouts on color paper
- **Office worker**
  - Use of color filters/lenses
  - Use of blue light blocking software
  - Implement preventive and restorative rest breaks
  - Provide preferred sitting in meetings/ability to call into meetings
  - Print material to decrease exposure to screens
- **First responder**
  - Patient must be 100% prior to returning to work

The Return to Work Process

Video

Navigating Visual Dysfunction: Part 2

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- Work Accommodations
- **School Accommodations**
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School Accommodations

- Symptoms can impact a student's ability to perform certain school related activities:
  - Reading speed and accuracy
  - Ability to successfully copy from the board
  - Tolerance of screens (Smart Board, PowerPoint, Projectors, iPad, computers, TV)
  - Writing in a straight line
  - Ability to complete class work/homework/tests without an increase in symptoms

Graduated Return-to-School Strategy

Stage	Activity	Goals of each step
1. Daily activities at home that do not give the child symptoms	Typical activities of the child during the day as long as they do not increase symptoms (reading, texting, screen time). Start with 5-15 min at a time and gradually build up	Gradual return to typical activities
2. School activities	Homework, reading or other cognitive activities outside of the classroom	Increase tolerance to cognitive work
3. Return to school part-time	Gradual introduction of schoolwork. May need to start with a partial school day or with increased breaks during the day	Increase academic activities
4. Return to school full-time	Gradually progress school activities until a full day can be tolerated	Return to full academic activities and catch up on missed work

http://bjsm.bmj.com/content/51/11/838#T1

The Process

- Evaluation and establishment of individualized care incorporating education, therapeutic tasks and simulated school tasks while using graded return approach
- Collaboration with team establishing return to school plan and appropriate accommodations (goal to return to school as soon as able)
- Attend school with modified schedule and accommodations. Child may start with listening days, and gradually increase time and school demands and then fade out accommodations

School Accommodations

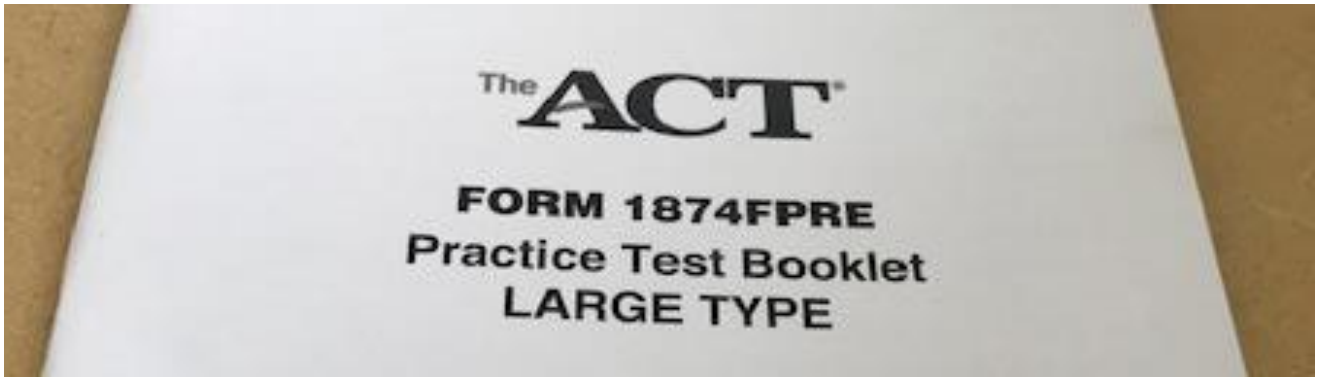
- **Reading and computer modifications**
- **Physical Environment**
  - Classroom
  - Hallway
  - Bus
- **Class/Homework**
- **Test Taking**
- **Behavioral management**

Physical demands of the school environment	Deficits from concussion impacting performance	Modifications to assist
Screens- Smart Board, PowerPoint, tablet, computer screen	Screen/light sensitivity and sensitivity to high contrast material	Use of color filters/lenses, have copy of class notes, allow for hand written assignments
Reading/note taking/test taking	Ocular motor, binocular vision and focusing flexibility deficits	Use of large font, line guides, color filters/lenses, incline board, marking test on paper vs scantron, copy of class notes, recording lectures, large font handouts, extra time for tests, 1 test per day
School environment (classroom, hallway, cafeteria, music class, school bell/announcements)	Poor tolerance to visually demanding/busy environments and noise sensitivity	Have student leave classroom early to avoid crowded halls, eat lunch in quiet environment, ear plugs as needed, excused from music class, preferred seating
Transportation-bus	Noise sensitivity and motion sensitivity	Use of ear plugs, sitting in front of bus, parents complete pickup/drop off

Incorporate preventative and restorative rest breaks throughout day

Emotional/Social Considerations

Video

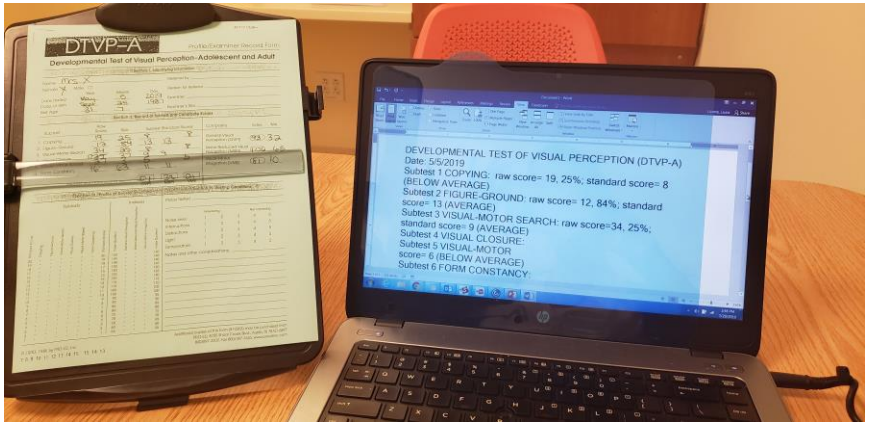


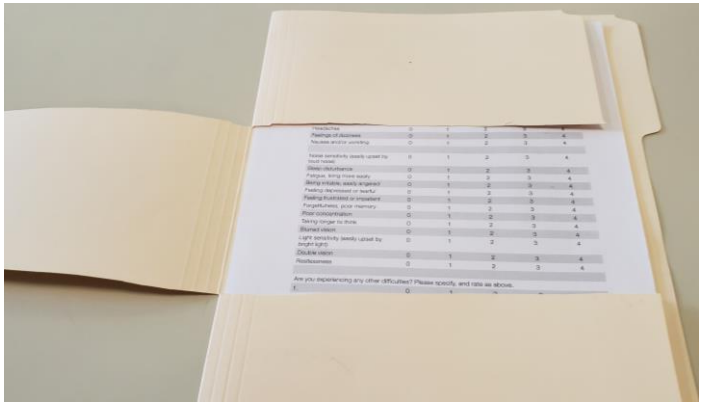
27. Which of the following expressions is a factor of $x^3 - 64$?

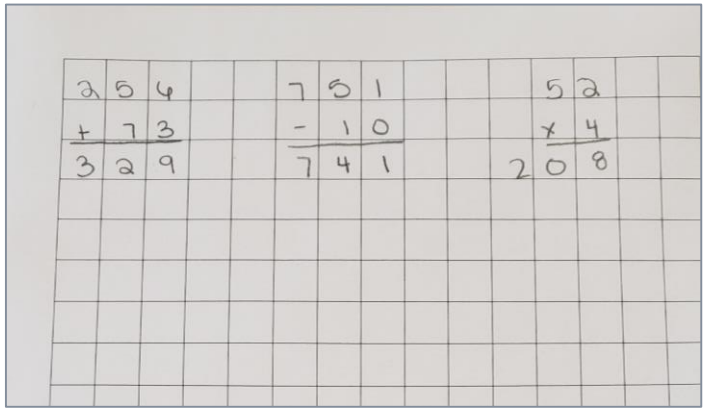
A. $x - 4$
B. $x + 4$
C. $x + 64$
D. $x^2 + 16$
E. $x^2 - 4x + 16$

28. The average of a list of 4 numbers is 90.0. A new list of 4 numbers has the same first 3 numbers as the original list, but the fourth number in the original list is 80, and the fourth number in the new list is 96. What is the average of this new list of numbers?

F. 90.0
G. 91.5
H. 94.0
J. 94.5
K. 94.8


DTVP-A
Developmental Test of Visual Perception-Adolescent and Adult
DEVELOPMENTAL TEST OF VISUAL PERCEPTION (DTVP-A)
Date: 5/5/2019
Subtest 1 COPYING: raw score= 19, 25%; standard score= 8
(BELOW AVERAGE)
Subtest 2 FIGURE-GROUND: raw score= 12, 84%; standard
score= 13 (AVERAGE)
Subtest 3 VISUAL-MOTOR SEARCH: raw score=34, 25%;
standard score= 9 (AVERAGE)
Subtest 4 VISUAL CLOSURE:
Subtest 5 VISUAL-MOTOR
score= 6 (BELOW AVERAGE)
Subtest 6 FORM CONSTANCY:




254 + 73 = 329
751 - 10 = 741
52 x 4 = 208


Power
파워라인 형광펜 베이비 마일드
마일드퍼플 마일드블루 마일드그린 마일드옐로우 마일드오렌지 마일드핑크
품질경영촉진법에 의한 품질표시
품명 :파워라인 형광펜 베이비 마일드6색 색상 :6색
제조자명 :(주)자바펜 주소 :서울시 강서구 화곡로 63길 37(등촌동)
전화번호 :(02)2252-6677 제조년월 :별도표시
보증내용 :유통중에 손상되었거나 제품성능에 이상이 있는 것으로 확인된 제품은
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사용상 주의사항
용도 이외에는 사용하지 마십시오. 입에 넣거나 대지 마십시오. 충격을 주지 마십시오.
사용후 뚜껑을 꼭 닫아 주십시오. 유아의 손에 닿지 않는 곳에 보관하십시오.
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MADE IN KOREA
Java
WRITING INSTRUMENT
PP
8 809419 814244

Successful Use of School Accommodations

Video

Navigating Visual Dysfunction: Part 2

- Ophthalmology/Optometry
- Work Accommodations
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- **Lab**
- Case Examples
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Lab

- **Four lab stations**:
  - Binocular vision- assessment and treatment
  - Visual processing- assessment and treatment
  - Ocular motor- assessment and treatment
  - Accommodations/Compensatory Strategies
- Please go to the station that corresponds to color dot on the front of folder
- 10 minutes at each station

Navigating Visual Dysfunction: Part 2

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Adult Case Example

Video

OT Evaluation

Screening/Assessment Tools	Score
Rivermead Post Concussion Symptom Survey	RPQ-3= 9 (physical symptoms) RPQ-13 = 20 (somatic symptoms)
King-Devick Test of saccadic eye movement	1 minute and 15 S No errors (fail > 57 S, maximum 1 error) eye strain=5/10
Trail Making Test- Part A	39.08 S Norm =24.40 S SD +/- 8.71
Lafayette Groove Pegboard	57.44 S Norm= 62.95 S SD +/- 8.4 S
Dynavision Training (*program A)	1.04 S reaction time
Convergence Insufficiency Symptom Survey	36 (score of 21 or higher is suggestive of convergence insufficiency)
Brain Injury Vision Symptom Survey	55 (score of 31+ suggestive of visual dysfunction)

COPM
Canadian Occupational Performance Measure

Activity limitations	Importance	Performance	Satisfaction
Reading	**10**	**2** Tolerance: 5 minutes	**2**
Computer use	**10**	**2** Tolerance: 30 minutes	**2**
Grocery shopping/Out with friends in community	**10**	**2**	**2**
Driving	**10**	**1**	**1**
	Average Importance: 10	**Average Performance: 1.75**	**Average Satisfaction: 1.75**

Vision Screen

- History: No significant medical history
- Glasses: None
- Symptoms-
  - Headache: YES
  - Eye Strain or Discomfort: YES
  - Double/blurry vision: No complaint
  - Moves head back and forth to improve focus: No complaint
  - Closes one eye to improve focus: No complaint
  - Frequently loses place when reading: YES
  - Difficulty concentrating/attending to visual stimuli: YES
  - Avoidance of near distance work: YES
- Ocular Motility-
  - Ocular range of motion: Intact
  - Fixation: Intact
  - Saccades: Vertical - Intact Horizontal- Impaired, slow movements, undershooting
  - Smooth pursuits: Intact
- Binocular Vision
  - Alignment: Alternate Cover - (+) for Exophoria Cover/Uncover- (-) for Tropias
  - Convergence: Near point of convergence (NPC) at 10 inches
  - Fields: intact
- Focusing Flexbility- poor tolerance to near<>transitions with blurred vision reported at near and far, left eye more than right

*Pt seen by optometry and diagnosed with Convergence and Accommodative insufficiency

Functional Impairments

- Decreased reading tolerance (5 minutes)
- Decreased screen tolerance (30 minutes)
- Decreased tolerance to complex visual stimuli (unable to return to work as data analyst)
- Decreased tolerance to visually demanding environments (i.e grocery shopping, restaurants, community)
- Visual motion sensitivity (currently unable to drive, difficulty with being passenger in car)
- Noise sensitivity (easily upset by noise, unable to tolerate crowds or social events)
- Dizziness with head movement (difficulty with household chores, putting away dishes)

Modifications/Symptom management

- Benefited from use of Gamma Ray blue light blocking glasses to address photophobia with screen use and in community
- Blue/purple/teal color filter for reading material
- Blocking strategies to reduce visual complexity, enlarged font, use of line guides for reading material
- Use of blue paper for printed material
- Phone settings (amber color filter, reduced white point, enlarged font)
- Computer screen: F.lux, Iris Mini (blue light blocking program)
- Iconico line guide for excel spreadsheets
- Ear Peace ear buds for noise sensitivity
- Incorporation of therapeutic rest breaks and exit strategies
- Graded return approach:
  - Return to work part time with reduced hours (2 hours, 3 days per week)
  - Return to driving 10 minute increments on familiar roads in the day time
  - Return social events: Attended bridal shower but not bachelorette party

Modifications/Symptom Management

Video

Group Work

- **Based on clinical presentation:**
  - Establish 2 functional goals for patient
  - Establish 2-3 treatment interventions

Goals

Short-term Goals

- Improve reading tolerance to 15 minutes with < 2 point symptom increase
- Improve screen tolerance to 45 minutes with < 2 point symptom increase
- Improve King Devick score to 65 seconds or less
- Reduce BIVSS score to 45 or less
- Complete Dynavision reaction to < .90 S
- Increase tolerance to visually demanding/community level environments- grocery shopping 15 minutes
- Independently carryover modifications and strategies to reduce symptoms

Long-term Goals

- Improve reading tolerance to 30 minutes with < 2 point symptom increase
- Improve screen tolerance to 60 minutes with < 2 point symptom increase
- Improve King Devick score to 52 seconds or less
- Reduce BIVSS score to 31 or less
- Increase tolerance to visually demanding/community level environments- grocery shopping/community 30 minutes
- Independently carryover home exercise program
- Improve average COPM performance and satisfaction scores by 4 points

Optometry Recommendations

Diagnoses: *Post Concussion Syndrome, Convergence Insufficiency, Accommodative Insufficiency*

- Continue vision exercises with occupational therapy for convergence insufficiency and accommodative insufficiency:
  - Brock String, barrel card, sliding tranaglyph, eccentric circles, monocular near/far Hart chart
- Recommend tinted lenses for photosensitivity
- Peripheral awareness activities
- Ocular motor therapy such as Ann Arbor tracking, word searches
- Integration with balance or gross motor training with above vision training.

Therapy Interventions

- Brock String, pencil push-ups, aperture rule, tranaglyphs, lifesaver cards, and eccentric circles to address binocular vision impairments
- Hart Charts, bullseye target cards, and note taking (for work presentations) to improve focus flexibility
- Dynavision to address ocular motor control, peripheral awareness/reaction time and visual processing skills
- Qbitz, Blink, word searches, dot to dots, adult coloring to address saccadic eye movement, visual endurance, visual processing skills
- Marsden ball to address visual tracking, central/peripheral integration, convergence/divergence, and visual anticipation of movement
- Visual-Vestibular integration tasks (Tangrams with head turns, functional turning and reaching into cabinets of various heights to locate items)
- Ann Arbor tracking sheets to saccades and visual processing speed

Therapy Interventions

Video

Screening/Assessment Tools	Evaluation Status	Discharge Status
Rivermead Post Concussion Symptom Survey	RPQ-3= 9 (physical symptoms) RPQ-13 =20 (somatic symptoms)	RPQ-3= 2 RPQ-13 =3
King-Devick Test of saccadic eye movement	1 minute and 15 S No errors, 5/10 eye strain (fail > 57 S)	42.16 S No errors 0/10 eye strain
Trail Making Test	39.08 S Norm =24.40 S SD +/- 8.71	23.78 S
Lafayette Groove Pegboard	57.44 S Norm= 62.95 S SD +/- 8.4	NT due within normal range on eval
Dynavision Training (*Program A)	1.04 S reaction time	.75 S reaction time
Convergence Insufficiency Symptom Survey	36 (score of 21 or higher is suggestive of convergence insufficiency) NPC: 10 inches	16 NPC: 4 inches
Brain Injury Symptom Survey	55 (score of 31+ suggestive of visual dysfunction	11

COPM
Canadian Occupational Performance Measure

Activity limitations	Importance	Performance	Satisfaction
Reading	**Baseline: 10** **Discharge: 10**	**Baseline:2 (5 min)** **Discharge: 8 (45-60 min)**	**Baseline: 2** **Discharge:8**
Computer use	**Baseline: 10** **Discharge:10**	**Baseline:2 (30 min)** **Discharge: 8 (60 min increments)**	**Baseline: 2** **Discharge:8**
Grocery shopping/Out with friends in community	**Baseline: 10** **Discharge:10**	**Baseline:2** **Discharge: 7**	**Baseline: 2** **Discharge: 7**
Driving	**Baseline: 10** **Discharge: 10**	**Baseline:1** **Discharge: 6**	**Baseline: 1** **Discharge: 6**
Baseline: Average Performance: 1.75 Average Satisfaction: 1.75			**Discharge:** Average Performance: 7.25 Average Satisfaction: 7.25

Functional Progress

Video

Goals

Short-term Goals

- Improve reading tolerance to 15 minutes with < 2 point symptom increase - MET
- Improve screen tolerance to 45 minutes with < 2 point symptom increase - MET
- Improve King Devick score to 65 seconds or less - MET
- Reduce BIVSS score to 45 or less - MET
- Complete Dynavision reaction to < .90 S - MET
- Increase tolerance to visually demanding/community level environments- grocery shopping 15 minutes - MET
- Independently carryover modifications and strategies to reduce symptoms - MET

Long-term Goals

- Improve reading tolerance to 30 minutes with < 2 point symptom increase - MET
- Improve screen tolerance to 60 minutes with < 2 point symptom increase - MET
- Improve King Devick score to 52 seconds or less - MET
- Reduce BIVSS score to 31 or less - MET
- Increase tolerance to visually demanding/community level environments- grocery shopping/community 30 minutes - MET - MET
- Independently carryover home exercise program - MET
- Improve COPM average performance and satisfaction score by 4 points - MET

OT Evaluation

Screening/Assessment Tools	Score
Rivermead Post Concussion Symptom Survey	RPQ-3= 6 (physical symptoms) RPQ-13 =36 (somatic symptoms)
King-Devick Test of saccadic eye movement	111 S with 5 Errors (fail > 100 S with maximum of 4 errors)
Lafayette Groove Pegboard	82 S Norm= 74.39 S SD +/- 15.47S
Symptom Assessment: Evaluating Risk Factors for Vision-Based Learning Problems by Quality of Life Short Form-College of Optometrist in Vision Development	Total 29: Indicating likely probability that poor visual skills are interfering with school performance
Convergence Insufficiency Symptom Survey	37 (score of 16 or higher is suggestive of convergence insufficiency)
WOLD Sentence Copying Test	60.6 letters/minute (considered fast speed for 4th grader)

Vision Screen

- History: anisocoria (being monitored by ophthalmology)
- Glasses: glasses for nearsightedness
- Symptoms-
  - Headache: yes
  - Eye Strain or Discomfort: yes
  - Double/blurry vision: yes
  - Moves head back and forth to improve focus: no
  - Closes one eye to improve focus: yes
  - Frequently loses place when reading: yes
  - Difficulty concentrating/attending to visual stimuli: yes
  - Avoidance of near distance work: yes
- Ocular Motility-
  - Ocular range of motion: intact
  - Fixation: able to maintain fixation for 10 seconds on target with no nystagmus or eye deviations
  - Saccades: Vertical - impaired with slowed movement Horizontal- impaired with slowed movement
  - Smooth pursuits: H pattern tested: impaired- jerky movements noted with 2 re-fixations
- Binocular Vision
  - Alignment: Alternate Cover - (+) for exophoria Cover/Uncover- (-) for tropias
  - Convergence: Near point of convergence (NPC) at 15”
- Fields: intact
- Focusing Flexibility- poor tolerance to near<>transitions with blurred vision reported at near and far, but greater at near

*pt seen by optometry and diagnosed with dry eye and convergence insufficiency

Functional Impairments

Video

Functional Impairments

- Decreased reading tolerance (5 minutes)
- Decreased screen tolerance (10 minutes)
- Decreased tolerance to note taking/classwork (10 minutes)
- Decreased tolerance to complex visual stimuli (increased headache, blurred vision and eye strain when looking at busy school material)
- Decreased tolerance to visually demanding environments (i.e. classroom, cafeteria)
- Decreased tolerance to fluorescent lights
- Decreased ability to participate in leisure tasks including sewing, reading and snowboarding
- Decreased ability to participate in sports/exercising including recess, gymnastics and physical education class
- Decreased sleep routine

Modifications/Symptom Management

School Accommodation Letter to Address Visual Dysfunction

- Physical Environment
  - Allow for preferred seating to reduce visual strain and exposure to fluorescent lights
  - Allow for window blinds to be lowered to reduce solar glare
  - Allow for use of Ear Peace ear plugs as needed
- Class Work/Homework
  - Allow use of purple filter to address sensitivity to high contrast material
  - Allow for use of incline board to tilt material
  - Provide classwork in large font
- Reading/Math Work
  - Allow use of blocking strategies to reduce visual complexity
  - Allow for use of large font books/handouts as able
  - Allow for use of line guide
  - Allow for use of purple filter
  - Allow math assignments to be completed on graph paper
- Screen Time
  - Provide printout of powerpoint presentations/smart board notes or allow for copy of peer's notes
  - Allow for use of purple filter over monitor
  - Allow for screen monitor brightness to be decreased
- Allow for restorative and preventive breaks to maintain symptoms increase at sub-threshold level (> 4/10).
  - Allow student to rest head on desk or if necessary excuse self to nurse

Please note, 504 plan already in place upon evaluation, which included one test per day with extra time, no gym, music or recess

Modifications/Symptom Management

Video

Group Work

- **Based on clinical presentation:**
  - Establish 2 functional goals for patient
  - Establish 2-3 treatment interventions

Goals

Short-term Goals

- Increased reading tolerance to 15 minutes with < 2 point symptom increase
- Increased screen tolerance to 20 minutes with < 2 point symptom increase
- Will complete King Devick Test with 4 errors or less
- Will carry over 3 or more visual modifications/strategies in school environment to assist with symptom management with min cuing from educational staff

Long-term Goals

- Increased reading tolerance to 45 minutes with < 2 point symptom increase
- Increased screen tolerance to 45 minutes with < 2 point symptom increase
- Will complete King Devick Test with 4 errors or less in < 100 S
- Will tolerate full day of school (testing/quizzes/assignments) with accommodations/modifications with < 2 point symptom increase
- CISS score of < 30

Optometry Recommendations

Diagnoses: *Concussion with loss of consciousness of unspecified duration, subsequent encounter, Convergence Insufficiency, Aniscoria (preexisting), Dry eye*

- Continue vision exercises for convergence insufficiency
  - Brock String, pencil push-up
- Lubricating drops
- Continue with use of glasses
- Follow-up in 3 months

Therapy Interventions

- Brock String, pencil push-up and wall dot (to address binocular vision)
- Simulated note taking tasks/focusing flexibility (to increase tolerance for visual tasks within school environment)
- Dynavision (to address ocular motor control, peripheral awareness, visual processing skills)
- Spot-it, Sleeping Queens (to address saccadic eye movement, visual endurance, visual processing skills)
- Marsden ball (to address ocular motor control, binocular vision, visual-motor integration)
- Visual-Vestibular integration tasks (spot it with head turns/ spot it on bosu ball)

Therapy Interventions

Video

Screening/Assessment Tools	Initial Score	Discharge Score
Rivermead Post Concussion Symptom Survey	RPQ-3= 6 (physical symptoms) RPQ-13 =36 (somatic symptoms)	RPQ-3= 2 (physical symptoms) RPQ-13 =11 (somatic symptoms)
King-Devick Test of saccadic eye movement	111 S with 5 Errors (fail > 100 S with maximum of 4 errors)	67 S with 2 Errors
Lafayette Groove Pegboard	82 S Norm= 74.39 S SD +/- 15.47 S	65 S Norm= 74.39 S SD +/- 15.47 S
Symptom Assessment: Evaluating Risk Factors for Vision-Based Learning Problems by Quality of Life Short Form-College of Optometrist in Vision Development	Total 29: Indicating likely probability that poor visual skills are interfering with school performance	Total 24 Indicating fair possibility that poor visual skills are interfering with school performance
Convergence Insufficiency Symptom Survey	37 (score of 16 or higher is suggestive of convergence insufficiency)	28 (score of 16 or higher is suggestive of convergence insufficiency)
WOLD Sentence Copying Test	60.6 letters/minute (considered fast speed for 4th grader)	Not re-tested due to initial performance

Functional Progress

Video

Goals

Short-term Goals

- Increased reading tolerance to 15 minutes with < 2 point symptom increase MET
- Increased screen tolerance to 20 minutes with < 2 point symptom increase MET
- Will complete King Devick Test with 4 errors or less MET
- Will carry over 3 or more visual modifications/strategies in school environment to assist with symptom management with min cuing from educational staff MET

Long-term Goals

- Increased reading tolerance to 45 minutes with < 2 point symptom increase MET
- Increased screen tolerance to 45 minutes with < 2 point symptom increase MET
- Will complete King Devick Test with 4 errors or less in < 100 S MET
- Will tolerate full day of school (testing/quizzes/assignments) with accommodations/modifications with < 2 point symptom increase MET
- CISS score of < 30 MET

Advice for Concussion Recovery

Video

Navigating Visual Dysfunction: Part 2

- Optometry/Ophthalmology
- Work Accommodations
- School Accommodations
- Lab
- Case Examples
- Questions

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