Visual-Perceptual Deficits & Treatment Strategies Post TBI

Part 2

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Visual-Perceptual Screening

"How about the second line?"
Visual Screenings

- Should include assessment of:
  - TBI history / report of symptoms
  - Visual Acuity
  - Oculomotor / eye movement
    - Alignment
    - Fixation
    - Vergence
    - Accommodation
    - Saccades
    - Pursuits
    - ROM
  - Visual fields
Visual Screenings

**Client Profile**
- TBI history
- Vision history
  - Glasses? What kind?
- Patient/family report of symptoms and occurrence
- Clinical observation
  - ADLs & IADLs
  - Postural assessment
  - Gaze preference?

**Visual Acuity**
- Distance Acuity
  - ID small details far away
- Near
  - ID small details that are close
- Functional Screening
  - Distance – Reading the clock on the wall, room signage
  - Near - Reading the menu, channel guide, name tag
Visual Screening

**Alignment**
- Position of eyes in relation to one another
  - Deviation at rest?
  - Deviation with pursuit?
  - Describe direction of deviation

**Fixation**
- Ability to maintain gaze on an object
- Look for nystagmus when head is stable & upright & eyes in fixed position
- Present targets at midline, right, and left (~16-20”)
- Can person sustain fixation for several seconds?
Visual Screening

Near Point Convergence & Accommodation

- Ability to bring both eyes together for near vision
- How well do the eyes work together?
- Test: measures distance from eyes where both eyes can focus without double vision or eyes drifting
  1. Move pen towards nose
  2. Have person maintain focus on pen
  3. Should be able to maintain focus then “break” 3” from nose
  4. Refer if “break” more than 4” and/or reports double vision before 3”
Visual Screening

Saccades
- Sequenced, small, precise, and rapid eye movements
- Observe:
  - Speed
  - Accuracy
  - Eyes still at fixation?

Pursuits
- Tracking a moving stimulus when the head is steady
- Observe:
  - Smoothness
  - Accuracy – are there lags or overshoots?
Visual Screening

Ocular ROM / Gaze Stability
- Ability to gaze in various directions

Field Deficits
- Confrontation testing
Visual Screenings
It’s a team effort! Refer!

- Optometrist
- Neuro-ophthalmologist
- Physiatrist
- Neuro-psychologist
- Nursing
- Occupational Therapist
- Physical Therapist
- Speech Language Pathologist
- Family / Caregivers
Visual-Perceptual Treatment Strategies
Treatment Strategies
What does evidence-based research say?


1. Strong evidence supports visual scanning as an effective intervention to improve search skills
   • Computer search tests vs. functional search tests

2. Insufficient evidence supports scanning alone to improve reading
   • Reading involves saccades, directionality

3. Limited evidence supports use of adaptive strategies
   • Prisms for visual field awareness and functional mobility
   • Scrolling text for reading for those with hemianopia
   • Noted self reported improvements in quality of life, visual field awareness, walking, negotiating crowds, and obstacle avoidance
Treatment Strategies

What does evidence based research say?

4. Limited evidence to support vision therapy to remediate oculomotor signs and symptoms in people with TBI

5. Insufficient evidence to support visual restorative therapies (VRTs) to remediate impaired visual field and visual search skills
   • VRT is a part of vision therapy that attempts to stimulate the impaired visual field by introducing lights, letters, or objects randomly in the intact field of view

6. Moderate evidence supports the use of audiovisual stimulation (AVS) for visual field deficits or oculomotor symptoms

7. Strong evidence supports the use of cognitive training approach to address V-P deficits to improve ADLs, recognize unfamiliar faces, and make inferences about basic emotions.
Treatment Strategies: Vision Therapy

- Also referred to as Behavioral Optometry, Developmental Optometry or Rehabilitative Optometry

- Structured form of visual exercises determined in collaboration with an eye care specialist

- In office with vision specialist
  - MD guides treatment
  - Involves lenses and prisms as a therapeutic strategy, not compensatory

- Home activities for reinforcement
Treatment Strategies: Vision Therapy

- Overall program structure
  - Gross motor deficiencies
  - Visual acquisition skills
    - Eye movements, accommodation, peripheral awareness, binocularity
  - Visual information processing

- Role of OT, PT, SLP?
  - A lot of cross over, requires more specialized training
  - Incorporate strategies into functional treatments
Treatment Strategies:
Vision Therapy
Treatment Strategies: Scanning

- Most widely researched & recommended for visual field loss and visual inattention
- Remember the “three S’s”
  - Sharing
    - Involve all disciplines
  - Stress relief
    - Address in relation to basic visual skills
    - Balance compensatory & remedial strategies
    - Grade activities
  - Sensory-motor integration
    - Recognize visual process more than sensory input
    - Involves input - processing – output
    - Role of kinesthetic & vestibular input
    - Limb activation

(Berryman, Rasavage, & Politzer, 2010)
Treatment Strategies: Scanning
Treatment Strategies: Scanning
Treatment Strategies: Audio-Visual Stimulation

- Scanning training in which a visual stimulus, typically illumination of light-emitting diodes, is presented with white noise auditory stimulus
- Re-educates brain waves
- Most effective in improving visual exploration and reading performance
Treatment Strategies: Prisms

- Goal: improve visual efficiency for improved participation in meaningful daily tasks
- Goal: achieve a consistent and efficient head turn to compensate for loss
- How do they work?
  - Reflect the image of an object that is in a person’s impaired visual field into a portion of the intact visual field
- Place device in front of one eye only to provide a clear cue to initiate head turn
- In theory – sounds great!
- In reality – requires skilled training & optometrist input / guidance
  - Only visual field loss without inattention benefit best
  - Requires good insight, intact cognition good scanning skills, and ability to divide and alternate attention

(Berryman, Rasavage, & Politzer, 2010)
Treatment Strategies: Prisms
Treatment Strategies: Compensation / Modifications

- Lighthouse method
- Anchors
  - Colored & textured
- L-shaped bookmark
- Typo scope
- Enrich scanning environment
- Lubricating drops / “Artificial Tears”
Treatment Strategies

- Selective occlusion
  - When eye fusion can’t be achieved with lenses or prisms
  - Eliminates double vision
  - Do not use full occlusion aka “patching”
- Sunglasses and tinted lenses/overlays
  - Outside: sunglasses and hat
  - Inside: tinted overlays
  - Filters/screens/apps for electronic devices
- Family / caregiver education & involvement
Treatment Strategies: Compensation / Modifications
Tips for Managing Symptoms

GOAL: Participate in desired activities prior to symptom onset

1. Plan, pace, and rest
   - 15 min rest break / hour
   - Use a timer to pace activities & planner to prioritize
   - Encourage routine, good sleep patterns, exercise, & nutrition

2. Help to recognize connection between activities & symptoms
   - Amount & type
   - How taxing is the activity?

3. Re-introduce activities in a graded & gradual way
   - Alternate thinking & doing activities
Tips for Managing Symptoms

GOAL: Self-manage daily schedule with a planner to reduce symptoms

- Need a planner to pace activities
- Recognize patterns
  - Too many activities = + symptoms
  - Group activities together / energy conservation
- It’s a log!
- Schedule in rest periods
- Focus on priorities for the day
- Need to record all activities, even if insignificant in their opinion
Tips for Managing Symptoms

Which activities are the most taxing?
Tips for Managing Symptoms

• How do you determine how taxing an activity is?
  • Complexity of task
  • Stimulation
    • Auditory & visual
  • Amount of talking involved
  • Amount of filtering required
  • Visual processing required
  • Experience
    • What has been difficult in the past?
What’s the Bottom Line?

Deficits vary greatly from one person to the next. More rigorous research is needed on the topic. Scanning works! Symptom relief is crucial…it’s a lifestyle change!

Any questions? Thank you!


