



Return to Work Following Concussion:

An OT Approach
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Learning Objectives

At the end of this presentation participants will:

- Obtain basic knowledge of Persistent Post Concussion Symptoms (PPCS)
- Learn OT approach to addressing common symptoms of PPCS
- Determine general goals for progression

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PPCS Definition

- A concussion is a trauma-induced alteration in mental status that may or may not involve a loss of consciousness. It can result in loss of memory for events immediately before or after trauma and can result in local neurological deficits that may or may not be transient. (Essential Brain Injury, 2016).
- Persistent post-concussive symptoms is a complex disorder following a concussion, lasting weeks or months, consisting of symptoms such as headaches or dizziness.

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National Demographics

40% of Glasgow coma ED admissions are rated within the mild BI range. 45% of pts on admission have short unconscious times of 1 day or less (Essential Brain Injury Guide, 2016).

61% are employed at time of accident, 28% employed 1 year post ("National Data", 2018).

Known TBI Cases

| Category | Percentage |
|-----------------|------------|
| Mild | 75% |
| Moderate-Severe | 25% |

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OT Considerations

- Vision assessment: pursuits, saccades, convergence, activity tolerance. 30-42% of pts suffer from oculomotor deficits following concussion (Gallaway, 2016), and has even been reported to be prevalent in as high as 60% in the population (Ventura, 2016).
- Return to work: work hardening, work simulation, worksite eval.
 - Together with PT working on vestibular symptoms, and SLP working on cognitive symptoms, team works to return pt back to work (Finn, 2015).

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Vision Assessment

- Vision assessment can be an early indicator of concussion. Assessments such as the King Devick are often used on the sidelines to detect a concussion quickly after impact (Finn, 2015).
- Vision assessment can also be used to mark progress or can be an indicator of when individual may be appropriate to return to work or driving
- Three major ocular movements should be assessed: convergence insufficiency, saccades, and smooth pursuits.

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Convergence Insufficiency


Convergence Insufficiency can make text look double when trying to read

Some people with Convergence Insufficiency experience a "halo effect" instead of double vision

- High occurrence in individuals with mTBI: ranging from 47-64% (Ventura, 2016).
- Represents the inability of the eyes to rotate inward to focus on a close object and maintain that position
- Convergence should be determined by identifying the nearest position that a person can no longer maintain focus
 - Brock string is a low-cost assessment tool to help determine convergence insufficiency and even suppression in an eye.


Brock String

- Requires individual to focus on individual beads at varying distances, forcing eyes to turn inward with progression
- Consists of 10ft white string with 3 small beads of differing colors
- Beads are spaced out depending on individual's near point of convergence



THE
BROCK
STRING

Brock String Application




Dynavision

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Vision training device


Research by Carrick et. Al. assessed use of Dynavision on 70 individuals diagnosed with PPCS past 6 months.

- All reported decrease in symptoms severity such as difficulty concentrating, memory, fatigue, confusion, headache, dizziness, nausea, blurred vision, and more in as few as 5 sessions.



Dynavision Video


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Marsden Ball

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- Traditional low cost eye exercise using a ball on a string to address oculomotor difficulties.
 - Can include numbers or letters on the ball for added difficulty
- Addresses convergence insufficiency and pursuits goals



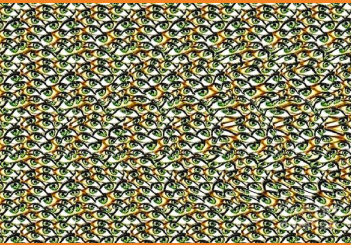
Marsden Ball Application



Visual Exercises for Home



- A home exercise program is key for continued steady progress.
- Additional exercises include Hart Chart or Tibetan Eye Exercise to address saccades and ocular range of motion.
- Brock string is also an excellent home exercise program to address convergence insufficiency.



Hart Chart




| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|----|
| 1 | O | F | N | P | V | D | T | C | H | E |
| | Y | B | A | K | O | E | Z | L | R | X |
| 3 | E | T | H | W | F | M | B | K | A | P |
| | B | X | F | R | T | O | S | M | V | C |
| 5 | R | A | D | V | S | X | P | E | T | O |
| | M | P | O | E | A | N | C | B | K | F |
| 7 | C | R | G | D | B | K | E | P | M | A |
| | F | X | P | S | M | A | R | D | L | G |
| 9 | T | M | U | A | X | S | O | G | P | B |
| | H | O | S | N | C | T | K | U | Z | L |

Tibetan Eye Exercise



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Pencil Pushups



- Most commonly prescribed treatment to address convergence insufficiency by ophthalmologists and optometrists.
- Only two studies of pencil pushups exist:
 - non-controlled study of 25 participants who used pencil pushups as a treatment for CI. Of those only seven (28%) showed improvements
 - Randomized placebo controlled study of 46 participants showed an improvement of 46.7% for near point convergence (Scheiman et. Al., 2005).
- Evidence is not strong for use of pencil pushups for treating convergence insufficiency

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General Goals for Progression

- Decrease signs/symptoms to within tolerable levels for that individual able to tolerate an entire work hardening session (1-3hrs) without needing to take a rest break due to increasing symptoms
- Worksite evaluation if necessary: meet with employer to set guidelines for goals to return to work
- Return to work with a graded schedule, recommendations ie: graded return to activities. (3x/week for 4hr shifts) (Varner, et. Al., 2016)
 - Pt receiving graded return to activity restrictions off avg 18 days compared to 32 days in control group.
 - Most factory jobs require return without restrictions. Discuss with employer if pt may start back at less demanding station/provide recommendations for success of pt.

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Increasing Activity Demands

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- Start with basic skills such as vision exercises
 - Brock string/hart chart/marsden ball for activity tolerance
- Start addressing specific skills needed for the job on a graded timeline

Provide example of specific return to work timeline for desk job-include video
Provide example of specific return to work timeline for factory job-include video

RTW Timeline

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- Example gradual return to work
 - 1st week: 4 hrs/day, 3 days/week
 - 2nd week: 6 hrs/day, 3 days/week
 - 3rd week: 8 hrs/day, 3 days/week
 - 4th week: 8 hrs/day, 4 days per week
 - 5th week: original schedule

Worksite Eval

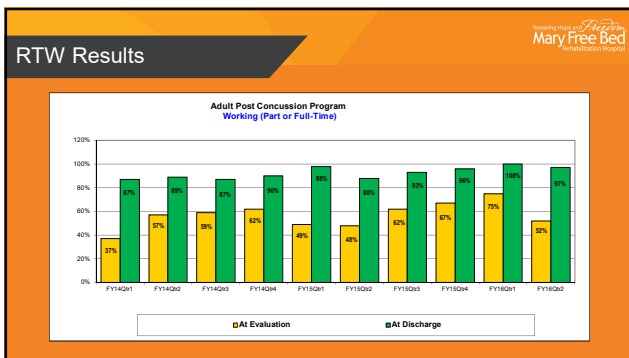
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- Vision assessment: pursuits, saccades, convergence, activity tolerance. 30-42% of pts suffer from oculomotor deficits following concussion (Gallaway, 2016).
- Return to work: work hardening, work simulation, worksite eval.
 - Together with PT working on vestibular symptoms, and SLP working on cognitive symptoms, team works to return pt back to work
- Assess working conditions, determine physical or cognitive responsibilities of job, break times, safety
- Focus on: lifting, time in front of a screen/in bright light, time between breaks, positional changes, operating heavy machinery

Worksite Eval


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| | | | |
|---|--|---|--|
| Years Worked for Company: | | Wage to/from Floor: | |
| Work hours prior to injury: | | Desk job: | |
| Supervisor's Name: | | | |
| Phone Number: | | | |
| Email Address: | | | |
| Patient signed release to contact employer? <input type="checkbox"/> Yes Request was made for employer to fax job description? <input type="checkbox"/> Yes | | List any position requirements (examples: Supine, Kneel, Squat, Crawl, Bending, Stopping, Ladder). If stairs are required describe amount/frequency. | |
| Communication with Employer: Is there a possibility for pt to RTW with potential restrictions which may include graded work hours, modifications and physical restrictions? <input type="checkbox"/> Yes <input type="checkbox"/> No | | Power tool or Machinery requirements: Desk/Computer Work requirements: Customer or Peer Interaction requirements: Calculations/Math requirements (including mental calculations or any money management) | |
| Other work positions available within the same company that the pt could transfer to or apply for: _____ _____ _____ | | Current Work Restrictions: _____ _____ | |
| Job description per patient and/or employer: Time spent with: Sustained Standing: _____ Working: _____ Sitting: _____ Other: _____ | | Work comp? Yes ___ No ___ Auto injury? Yes ___ No ___ Receiving Wage replacement? Yes ___ No ___ | |
| Temperature of work environment: Cleanliness/Organization of workplace: Noise Level of work environment: Typical Lunch/Break length/time of day: | | Date Patient needs to RTW due to work requirements: FIM A Update time remaining: | |
| Material Handling: Material Handling _____ Weight _____ Frequency _____ Overhead _____ Shoulder Level _____ | | | |





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