

From Injury to Insight & Advocacy: A Journey Through Concussion as Both Patient and OT



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Objectives

Provide brief review of concussion facts, myths, signs & symptoms, history & research trends

Share a personal journey through concussion

Discuss role of occupational therapy in function based concussion recovery, introduce assessment tools/screens, and review OT documentation of acute care concussion patients

Share current efforts in enhancing mTBI education within a large healthcare network

Why this topic?

BRAIN INJURY



BRAIN INJURY
ASSOCIATION
OF OHIO

A Hidden Crisis, A Public Health Priority.



1 in 4 People Will Experience a Brain Injury in Their Lifetime –

Brain injuries affect millions of individuals every year, with long-term impacts on physical, emotional, and cognitive health.



Brain Injury is a Leading Cause of Disability –

Over 5 million people live with long-term disabilities due to brain injuries in the U.S. alone, highlighting the importance of awareness, treatment, and support.



Early Intervention Can Save Lives

– Timely treatment and rehabilitation following a brain injury can significantly improve recovery outcomes and reduce long-term disabilities.



Support Services Help Improve Quality of Life –

Advocacy for brain injury survivors ensures they have access to essential support services, such as neuro resource facilitation, therapy, and community reintegration programs, which improve their quality of life.

Why?

Medical schools only address concussion an average of **3-4 hours total**.

Data from 4 studies:

- 10% - 38.4% of medical students reported they received ***ZERO education about concussion.***

Survey of Acute Care coworkers (OT, PT, SP)

65% = do not feel educated enough in concussion to advocate for and/or educate patient and/or family for “next steps” following acute care discharge.

55% = do not feel comfortable educating/treating a patient with a probable concussion in the acute care environment.

Acute Care barriers identified – patient baseline cognition, lack of support, prior lifestyle, family/caregiver involvement, productivity, ***time and education***

My very personal why...

One day you will tell your story of how you overcame what you went through and it will be someone else's survival guide

- Brene Brown

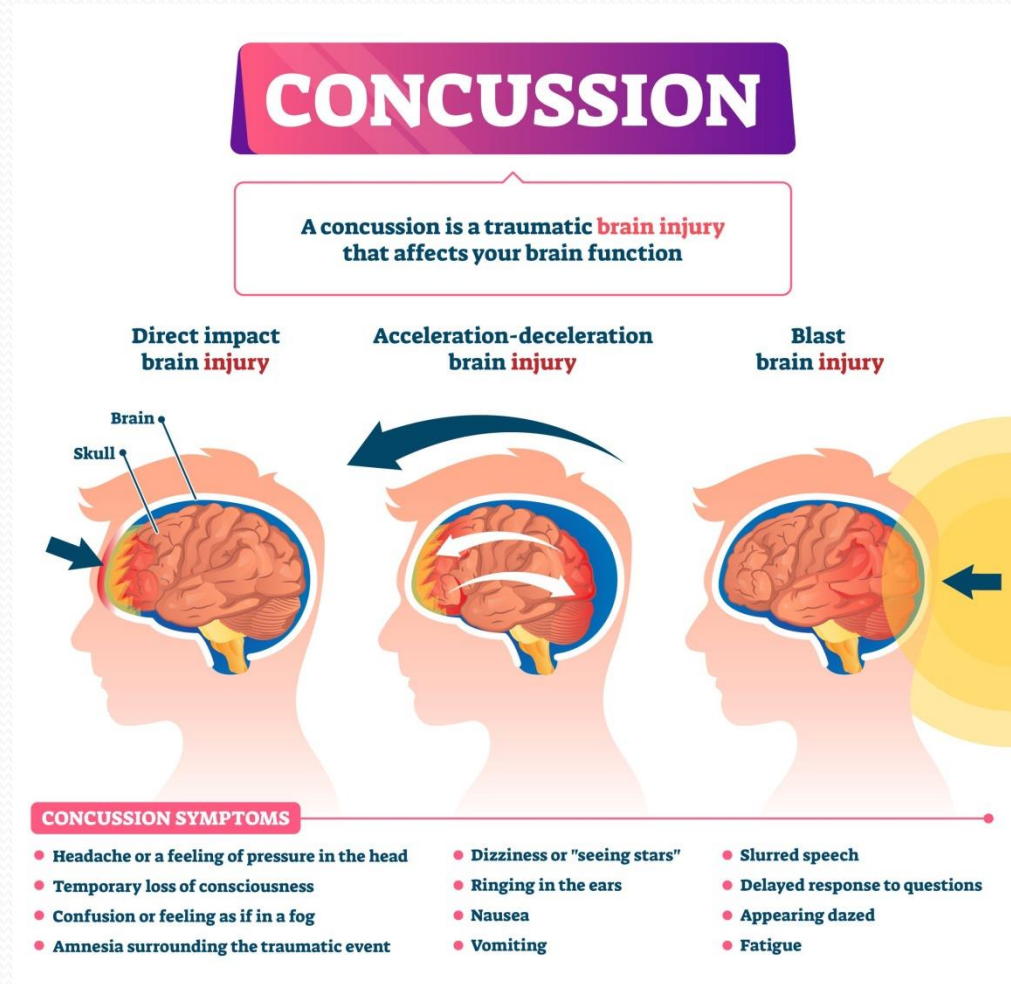


What is Concussion?

According to the CDC:

...brain injury caused by a bump, blow, or jolt to the head or body that causes:

- the head and brain to move quickly back and forth
- the brain to bounce or twist in the skull from this sudden movement
- chemical changes in the brain and sometimes stretching and damage to brain cells.

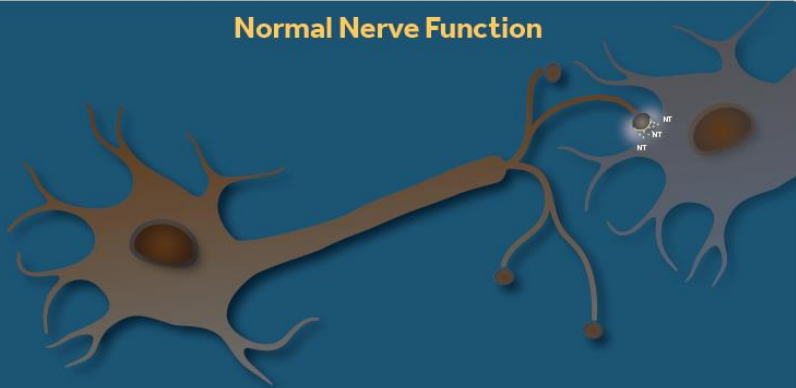




FACTS	MYTHS
A concussion is referred to as a mild TBI (mTBI), with "mild" referencing the severity of the trauma, not the consequences	Concussions are only caused by a direct impact to the head.
Symptoms are not always present immediately , rather becoming apparent hours or days after the injury	If symptoms don't appear immediately, it's not a concussion
MRI or CT scans typically come back "normal." This does not mean there is no injury.	A concussion occurs only when someone experiences a loss of consciousness.
The recovery period for each person is different & may fluctuate, no two brain injuries are alike.	All concussions are the same

Neurometabolic Changes

Normal Nerve Function

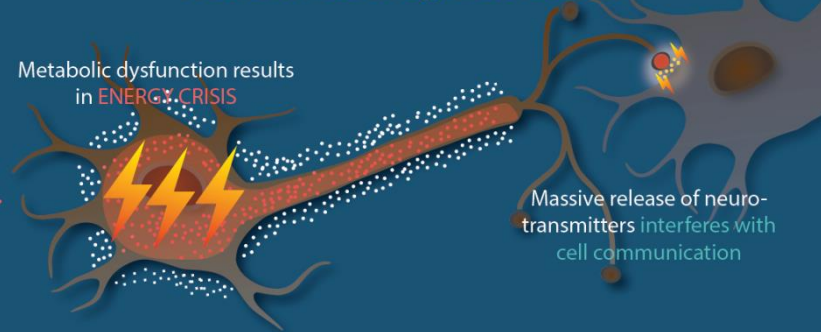


Neurotransmitters are released in an organised manner, triggering the next cell with a specific coded message



Neuron Following Concussion

Metabolic dysfunction results in **ENERGY CRISIS**



Massive release of neurotransmitters interferes with cell communication

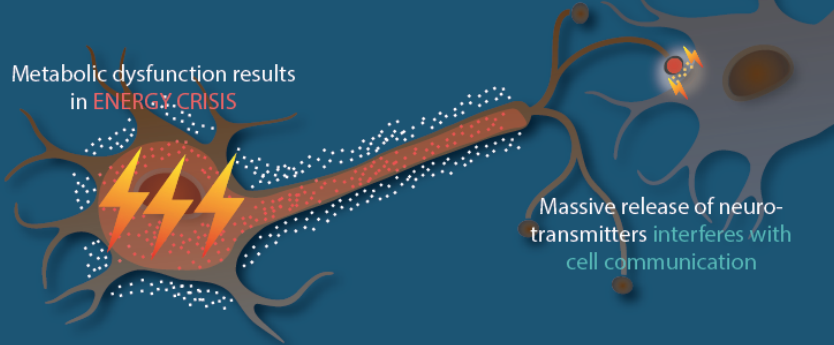


Nerve cell is extremely **vulnerable** in this condition and further injury or stress can lead to **serious cell damage or cell death...**



Neuron Following Concussion

Metabolic dysfunction results in **ENERGY CRISIS**



Massive release of neurotransmitters interferes with cell communication

It may take **many days** for the nerve cells to return to their normal condition



Neuron Following Concussion



Massive release of neurotransmitters interferes with cell communication

After several days



SIGNS OF A CONCUSSION

PHYSICAL



- Headache or a feeling of pressure in the head
- Nausea or vomiting
- Dizziness or balance problems
- Blurred or double vision
- Sensitivity to light or noise
- Fatigue or drowsiness

COGNITIVE (THINKING)



- Confusion or feeling "foggy"
- Difficulty concentrating
- Memory problems (especially around the event the caused the injury)
- Slow response to questions

EMOTIONAL OR MOOD



- Irritability
- Sadness
- Anxiety
- Feeling more emotional than usual

SLEEP



- Sleeping more than usual
- Difficulty falling asleep
- Sleeping less than usual

Vestibular dysfunction occurs in 40% of concussion patients



It's not just dizziness...



History of Concussion & Research Trends

1970s –80s

- **feminist movement** - 1 in 4 women victim of domestic violence
- 90% of those = at least one TBI

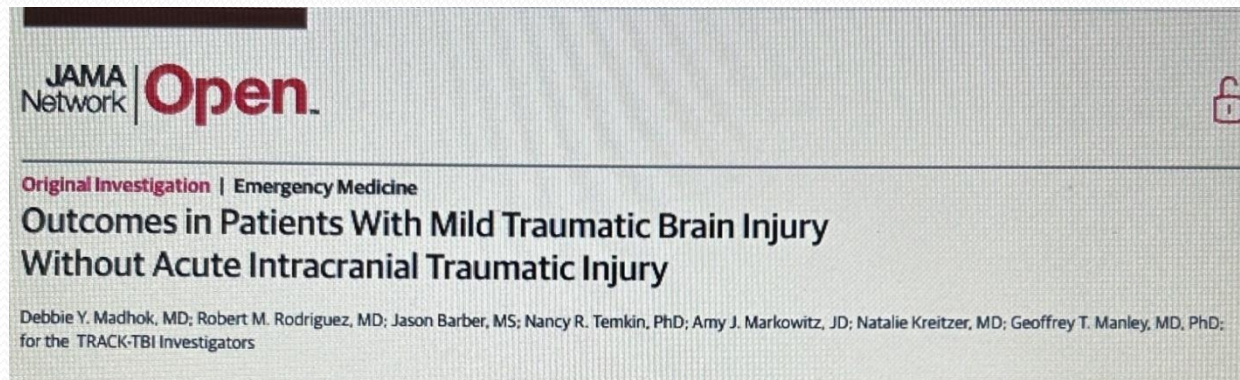
1990s-early 2000

- concussion guidelines published (1986) & modified (1997) w/ eventual abandonment of grading system & focus on individualized approach
- NFL study (effect of concussion on players), Traumatic Brain Injury Act – FIRST federal law to address concussion risk, reduction, research and treatment

Early 2000s - today

- Dr Bennet Omalu - Chronic traumatic encephalopathy (CTE)
- Operation Iraqi Freedom = TBI was signature wound. Funding begins.
- NFL acknowledges cognitive decline arising from repeated concussions, updated helmets, mandated 4 step concussion protocol
- DAILY research / study updates / evolving assessment tools/tests
- Awareness, advocacy, protect 'your melon' is cool!
- Addressing the non athlete concussion experience

History of Concussion & Research Trends



Question: the **2-week and 6-month functional outcomes** of patients with traumatic brain injury (TBI) who **presented in ED Glasgow Coma Scale (GCS) score of 15** and **without acute intracranial traumatic injury detected** on CT (ie, negative head CT scan)? (n=991)

Findings : **2 weeks post injury** – 27% recovery / 73% incomplete recovery
6 months post injury - 44% recovery / 56% incomplete recovery.

- 50% mTBI at level I trauma centers experience disability 12 months post injury,
- only 42% receive educational materials at discharge
- < 50% see a medical practitioner within 3 months of the injury

Conclusions / Relevance : ED clinicians **should recommend 2-week follow-up** visits for these patients **to identify those with incomplete recovery and to facilitate their rehabilitation.**

My Story

January 23, 2021

"do you know anything about those ear crystals? Oh, and you might have a concussion"



April 2023 - 1st drive

My Story

1 head ct	1 brain mri	Multiple blood tests
1 audiologist	1 neurologist	1 neurology PA
1 neuro ophthalmologist	1 optometrist	1 acupuncturist
1 massage therapist	3 ENTS	1 neuro-otologist
1 psychologist	1 mental health counselor	6 months of counseling
5 physical therapists	2 occupational therapists	1 workplace resignation
1 "forever" medication	6 pairs of migraine glasses	1 pair of Ear Loops
1 balance board	1 balance beam	dozens of flash cards / cards

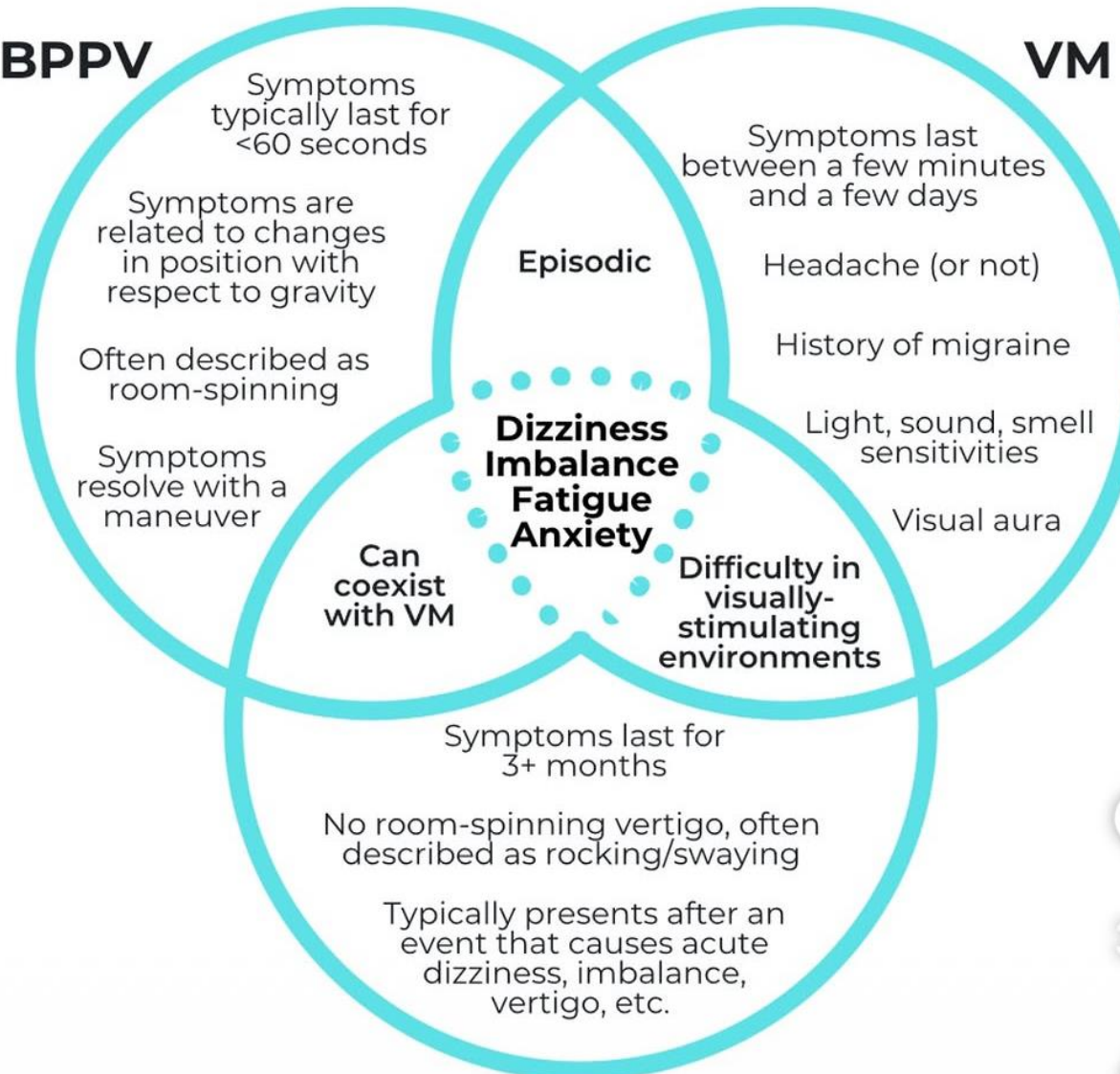
Too many BPPV corrections to count - sometimes multiple a week (10mos) – with frequent reoccurrences. Still hypersensitive on R.

Multiple visual dysfunctions, PPPD, PTSD, Vestibular Migraine, unilateral (R) vestibular hypofunction

Dozens of hours of personal research, adaptations and implementation of compensatory methods that have become the norm & thousands of dollars in copays & private pay

BPPV

VM



PPPD

bar

Vestibular Hypofunction

What it is:

A downregulation or weakening of the body's balance system—can develop after prolonged dizziness (like BPPV), inner ear damage, or infection

Symptoms:

- Woozy or off-balance feeling
- Worse with motion, busy environments, or walking
- May feel “foggy,” disoriented or visually overwhelmed
- Lasting unsteadiness

Treatment

- Vestibular rehab therapy
- Gaze stability and balance retraining
- Long-term improvements through structured PT

Balancing Act Rehab
Dr. Amber Ellis

**Visual Symptoms associated
with Ocular-motor Subtype [6]**

- Difficulty with visual activities (screen time, reading, near work, driving, etc.)
 - Asthenopia (eye strain)
 - Eye fatigue
- Problems with visual focus (i.e. convergence, accommodation)
 - Photophobia
- Blurred vision or double vision
- Eye pain/pressure behind the eyes
 - Difficulty judging distances
- Difficulty tolerating complex visual environments
- Significant exacerbation of premorbid visual impairment

**Overlapping
Symptoms**

- Dizziness
- Nausea
- Headaches
- Vestibulo-ocular dysfunction (ex: vestibular ocular reflex, visual motion sensitivity)
- Balance problems
- Disorientation
- Gaze stabilization
- Impaired coordination (including hand-eye coordination)

**Vestibular Symptoms
associated with Vestibular Subtype [6]**

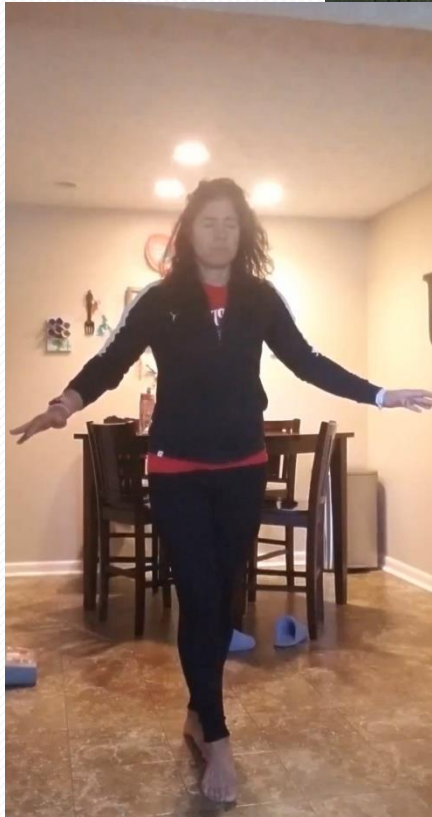
- Fogginess
- Lightheadedness
- Vertigo
- Disequilibrium
- Vestibulo-spinal dysfunction (ex: imbalance)
- Gait dysfunction
- Symptoms provoked by dynamic movement
- Abnormal coordination and motor control

Vestibular Disorders

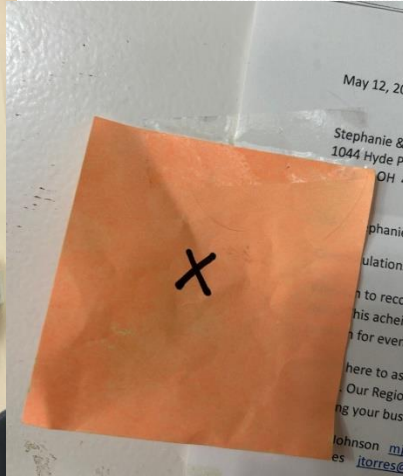
From an outsider's perspective, it can be difficult to grasp the situation.

Conversely, from the inside looking out, it's challenging to articulate.

VestibularJourney



Jun 22, 2023 >
7:57 AM



Home Exercises

Stagger Feet, eyes closed, slowly move head $\leftrightarrow$ x 30 $\updownarrow$ x 30

3 sets

Wobble Board - Front to Back, Hold Still with eyes Closed. 60 seconds

2 sets

Walking Fwd/Backward move head $\leftrightarrow$ Keeping eyes Focused on a card. Repeat $\updownarrow$. (Card stays still)

5 Laps in hallway each way.

Stand on wobble board. Hold balance still. move card and head together $\leftrightarrow$ x 30 $\updownarrow$ x 30

2 sets

My "Live Life to the Fullest" Toolbox

BRADDELL FL-41 Rose & FL-60 Wayfarer Blue Light Glasses for Migraine Light Sensitivity, Fluorescent LED Lighting & Concussion

600+ bought in past month



Balance Board Professional Wobble Board for Adults Anti-Slip 350LBS Balance Boards for Physical Therapy Standing Desk Core Strength Wooden Balance Board Rocker Board

Amazon's Choice

1K+ bought in past month



Loop

4.6 ★★★★★ (12,133)

Loop Experience 2 Ear Plugs – Stylish Certified Hearing Protection for Concerts & Festivals, Live Events, Musicians, Sports, DJs and Nightlife – 17dB Noise Reduction Earplugs (High-Fidelity)

Amazon's Choice

6K+ bought in past month



My takeaways...

I AM a better listener

I FEEL what they cannot describe...

I REMEMBER what it was like to be misunderstood and dismissed....

I THINK even more functionally & long term...

I KNOW time with patients is short, but I STRIVE to educate as much as possible in a short amount of time...

I AM NOT AFRAID to refer folks directly to websites or providers that have helped me...

Do not take NO for an answer....

Use your resources - advocate - you don't know what you don't know!

Role of OT in Concussion Recovery

Occupational therapists help those with concussion symptoms ***re-engage with meaningful activities by addressing deficits in a holistic manner***

We treat ***more than the injury*** – we consider the individual, the environment, the social & economic context.

Goal = increasing participation in the occupations that matter most

Role = help facilitate the process of restoring identity safely & effectively

Priming

- visual perceptual screens - integration of cognitive strategies
- functional balance - relaxation & grounding techniques

Activity Analysis of any occupation

- physical (balance, strength, vision)
- cognitive (spatial awareness, memory, attention, sequencing steps),
- emotional (confidence, managing anxiety, motivation to start)

Real World Tasks

- Endless list of possibilities...because concussion recovery happens ***through doing the activities that gives life purpose!***

OT Role: Functional Assessment

Functional assessment in acute care is key – observe movement patterns, reactions, balance, s/s of symptom exacerbation & adjust

Ambulating in room to gather self care items.

Managing small spaces & monitor symptoms

- Maneuvering in room, turn to sit on commode & wash hands

Ambulate hallway while holding conversation & incorporating quick head turns

Reach in multiple planes while gathering ADL supplies in room

Provide patient with verbal 'scavenger hunt' around unit that incorporates multiple movement patterns

OBSERVE FUNCTION!

OT Role: Assessments

FREE & ONLINE

Post-Concussion Symptom Scale – kids

RiverMead Post Concussion Symptom Questionnaire – adults

Dizziness Handicap Inventory – vestibular

Fatigue Impact Scale – energy/mood

ImPact baseline testing – cognition, memory, attention, visual motor-speed

Montreal Cognitive Assessment MoCA – cognition

Vestibular Ocular Motor Screen VOMS – visual assessment for all ages

AS OTs OUR MAIN FOCUS is always how identified impairments relate to the symptoms and/or engagement in meaningful occupations

OT Role: Visual Skills Review

Foundational Oculomotor Skills

Must have basic skills to fully function in your environment in a manner where concussive symptoms are not exacerbated.



Warren (1993)

Fixation	Maintain gaze on one object
Pursuits	Maintain fixation on one moving object
Saccades	Quick eye movements that allow fixation of a variety of objects
Accommodation	Ability of the eye to focus on an object at various distances, also while shifting focus
Convergence	Ability of the eye to fixate on an object, and remain fixated, while the object moves closer to the face

OT Role: Educate & Empower

- Help patient “**name**” experienced symptoms, & educate on general symptoms
- **Adaptations** to physical environments, explore **modifications** & strategies for work/school/home.
- Promote ***gradual, symptom-guided re-engagement*** in daily activities & environments through activity pacing, cognitive exercises, and visual/vestibular training.
- **Encourage** light aerobic activity, cognitive pacing, and environmental modifications to manage light/noise sensitivity and reduce fatigue.
- **Stress the importance** of sleep, nutrition, relaxation, pain management
- **Recommend f/u with** outpatient concussion based therapy clinic & medical provider

See specific resources in Word Document associated with this presentation.

PLEASE find what is relevant for you/your site and USE/SHARE/KEEP/MODIFY!

Acute Care Case Study #1

17 year old female - ***ATV accident flipped over the handlebars – admitted for concerns for symptoms of concussion***



Why review her chart?

Obvious & immediate functional deficits – but “cleared” medically

Vision/Vestibular: double, blurry, unable to complete simple visual screen, nystagmus & nausea with position change.

Cognition: drowsy, oriented x2, delayed processing, easily distracted, redirection to task, cues for NWB LUE & safety

ADL: S-mod A in room/bathroom

Mobility: min A hand held

Recommendations: constant supervision & assist at d/c with home therapy – transition to outpatient concussion / vestibular based therapies

Acute Care Case Study #2

57 year old female presented to the ED with ***excessive drowsiness, mental fogginess, recent motor vehicle accident 1 week ago prior to presentation back to ED***



Why review her chart?

Discharged home from ED & returned

ADL : INDEPENDENT in room. ***BUT.....***

"I just have felt so foggy, I figure all my issues are b/c I want to sleep but my sister says she thinks I want to sleep bc I have a concussion"

Recommendations: lighting, environment set up, modify overall completion of daily tasks, balancing rest and activity, decreasing stressors and work load as able, seeking support from friends/family regarding childrearing.

"Pt seems to exhibit evidence of concussive symptomology that could be positively effected by outpatient therapy specific to such needs"

Acute Care Case Study Takeaways

Case study #1

Concussion IS mentioned in chart, but NO evidence of education completed between admission and therapy evaluations.

OT focus = gradual return to normal ADL in room without severe visual-vestibular symptoms. Family education. Refer to outpatient

Case Study #2

Discharged home and returned. Knew she didn't feel "right" despite being very high functioning.

OT focus = challenging patient in room environment and by adding more visual stimuli without increasing symptoms over 5/10. Refer to outpatient

NOT ONE RIGHT OR WRONG APPROACH

**WE MAY BE THE ONE AND ONLY SOURCE OF EDUCATION IN ACUTE CARE
WE MAY BE EVERYTHING THEY HAVE BEEN LOOKING FOR PAST ACUTE CARE**

Current collaboration efforts...

May 2026

Met with Physician responsible for EMR throughout ED system wide.
Connected with Main Hospital Trauma Program Manager – introduced idea for concussion education at d/c from Trauma unit specifically.

August 2026

Connected with Satellite Hospital Trauma Program Manager – began discussion re: education/resources for mTBI clinic.

September 2026

Connected with Hospital System Wide Educator – identified already available & approved resources, with plan to elaborate.

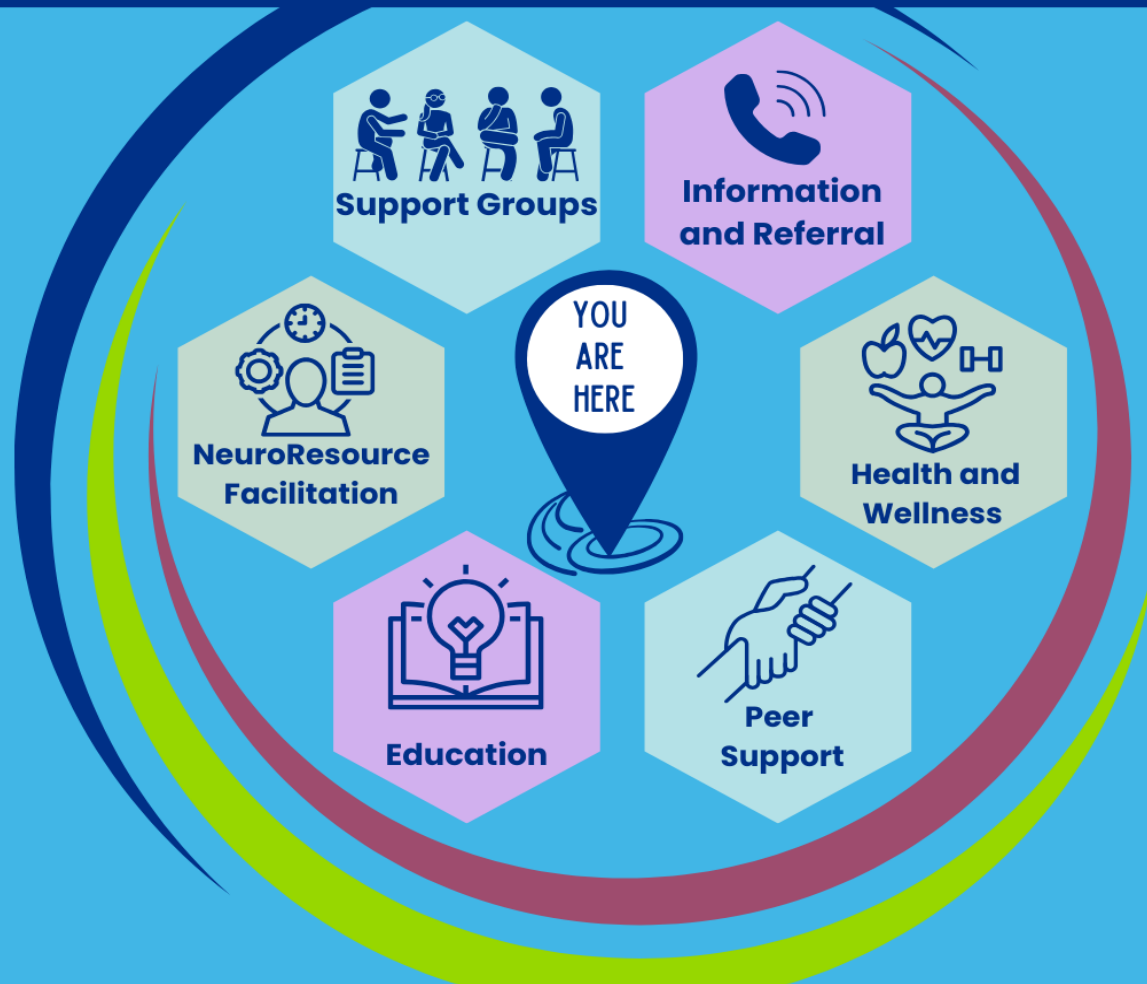
October 2026

Inservice to Acute Therapy Team - introduce Sept 2026 info, general edu.
Circle back to Hospital System Wide Educator & begin workflow.

Long Term Goal

- Incorporate system wide, mTBI/concussion discharge education tool, that includes general info, local and nationwide resources.
- Ensure appropriate staff know how/when to access/provide resources to patients, to ensure education is provided at discharge to address possible future needs and aid in recovery.

Brain Injury Resources



**BRAIN INJURY
ASSOCIATION**
O F O H I O

1-833-783-1495
www.biaoh.org

Thank you....

My husband and daughters, family, & friends

Dr. Christina Garrity, DPT

Dr. Frank VonMaluski

Dr. James Prueter, ENT

Kathy Stachowski, OTR/L, CBIST

Sarah Johnson, PT

Cathy Berry, MSW

The Brain Health Collective

Numerous OT, PT and SP friends & coworkers

My church & the protection of my Savior

My workplace – Miami Valley Hospital, Dayton, OH

YOU!

Contact me...

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**EVALUATION: From
Injury to Insight &
Advocacy: A Journey
Through Concussion as
Both Patient and OT**



*Scan QR code to submit
your evaluation*