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Home and Community Approach to mTBI/Concussion Management

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Objectives

- Define concussion/mTBI
- Identify the clinical profiles, signs/symptoms, and the relevance to mTBI rehabilitation
- Identify at least 2 assessment tools and 2 treatment interventions per discipline that may be utilized with this patient population
- Highlight the complexities of brain injury rehabilitation and important indicators for return to activity following a mTBI
- Identify other providers who may be involved in the rehabilitation process following an mTBI/concussion.


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Definition of mTBI/Concussion

"A mild TBI resulting from a blow or jolt to the head or body that cause the brain to move rapidly. This can disrupt normal brain function temporarily, often without visible structural damage"

"Mild" TBI usually not life-threatening

- Concussion may occur without
 - loss of consciousness
 - positive diagnostic results.
 - may be present even if there is no external sign of trauma to the head.
- Post-Concussion Syndrome (PCS) is the persistence of concussion symptoms beyond the typical course of recovery. After 1-2 months of persistent symptoms, doctors may diagnose patients with PCS.

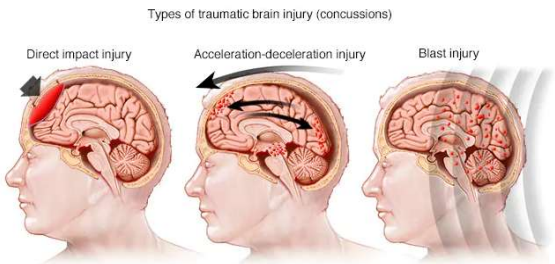



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Etiology of mTBI/concussions

Types of traumatic brain injury (concussions)




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Types of mTBI/concussions




Contrecoup Injury

Defined as brain injury occurs at sites remote to actual impact site on the head.

Coup Contrecoup Injury


Brain injury occurs at site of impact and on the opposite side of the head


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Concussion Signs

Concussion can present in a number of ways. This infographic describes common issues people experience after a concussion.



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What is a Clinical Profile?



Refers to a specific domain that includes a distinct pattern of symptoms experienced by an individual following a head injury.

Essentially, it describes the unique combination of symptoms a person exhibits after a concussion.

Patients may have no impact within a certain Clinical Profile or may have mild, moderate or severe impact. They may also have functional challenges in many clinical profiles.

The degree to which they experience functional disruption, and the number of clinical profiles impacted will influence rehabilitation intensity, duration and outcomes.



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Clinical Profiles



Ocular



Cognitive



Vestibular



Mood



Pain/Headache



(Autonomic Dysfunction)

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Clinical Profile- Cognitive

• Common Cognitive Symptoms:

- Forgetful/poor memory
- Difficulty concentrating
- Taking longer to think/slow processing
- Communication challenges
- Prone to cognitive overwhelm in stimulating environments
- Low energy/cognitive fatigue/brain "fog"
- Impaired executive functions
- *Symptoms often worsen throughout the day*



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Clinical Profile-Cognitive



Cognitive Assessments (at no cost):

- Neurobehavioral Symptom Inventory
 - MDC =5 points
- Modified Fatigue Impact Scale
 - MDC=16 points
- Post-Concussion Symptom Inventory
 - MDC=6 points

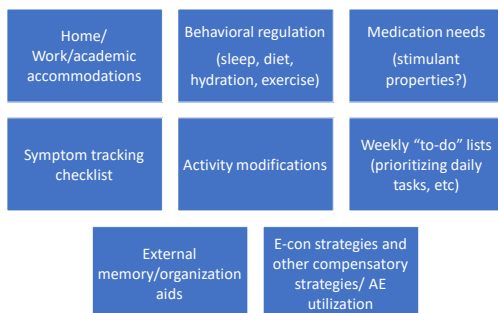
Cognitive - Communication Assessments (no cost):

- [Rivermead Post Concussion Symptoms Questionnaire \(RPOQ\)](#)
- [La Trobe Communication Questionnaire \(LCQ\)](#)
- [Communicative Participation Item Bank \(CPIB\)](#)
- [Neuro QoL](#)
- [Mental Fatigue Scale \(MFS\)](#)

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Clinical Profile-Cognitive

Speech-Language Considerations and Interventions



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Clinical Profile-Pain

• Common Pain Symptoms:

- Headaches
 - May be cervicogenic
- Nausea/vomiting
- Noise sensitivity
- Ringing in your ears
- Pain disrupting sleep
- Other orthopedic pain



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Clinical Profile-Pain

Considerations and Interventions

Headache specialist

Behavioral regulation (sleep, diet, hydration, exercise, etc)

Medication needs

Audiologist referral

Neuro-chiropractor

Symptom tracking



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Clinical Profile-Mood

Common Mood Disturbances:

- Increased irritability
- Increased sadness
- Feeling worried
- Panic attacks
- Less social
- More frustrated
- More restless
- Sleep disturbances



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Clinical Profile-Mood



Assessment Tool (at no cost)

- PHQ-9

Assessment Tool (at no cost)

- GAD-7

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Clinical Profile-Mood

Social Work Considerations and Interventions

NeuroPsych Referral

Social Work/Counselling Referral

Medication Needs

WARNING SIGNS OF SUICIDE:
The behaviors listed below may be some of the signs that someone is thinking about suicide.

TALKING ABOUT:	FEELING:
<ul style="list-style-type: none"> Thinking of death Over-guilt or shame Being a burden to others 	<ul style="list-style-type: none"> Feeling hopeless, trapped, or having no reason to live Continued, severe anxious, agitated, or flat affect Uncharacteristic emotional or physical pain

CHANGING BEHAVIOR, SUCH AS:

<ul style="list-style-type: none"> Making a plan or discussing ways to die Withdrawing from friends, leaving problems, giving away important items, or making a will 	<ul style="list-style-type: none"> Taking dangerous risks such as driving recklessly fast Displaying extreme mood swings Eating or sleeping more or less Using drugs or alcohol more often
--	--

If these warning signs apply to you or someone you know, get help as soon as possible, immediately if the behavior is new or has increased recently.

888 Suicide & Crisis Lifeline
 Call or text 888
 Email at 888lifeline.org

Crisis Text Line
 Text "TALK" to 38255

www.nimh.nih.gov/suicidprevention



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Clinical Profile-Ocular

Common Ocular Symptoms:

- Blurred Vision
- Binocular Dysfunction
- Abnormal Saccades
- Light Sensitivity
- Impaired accommodation
- Impaired visual focus/processing
 - Central-Peripheral Integration Disorder
- Eye Strain/ Visual Fatigue
- Peripheral Vision Impairments
- Midline shift



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Clinical Profile- Ocular



Blurred vision



Vision Snow



Double Vision



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Clinical Profile-Ocular



Ocular Assessments
(at no cost):

- General Vision Exam
- VOMS

- Binocular Vision Dysfunction Questionnaire (BVD)
- Brain Injury Vision Symptom Survey (BIVSS)
- Convergence Insufficiency Symptom Survey (CISS)

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Clinical Profile-Ocular

Occupational Therapy Considerations and Interventions



- Vision therapy
- Lens changes
- Occlusion therapy
- TheraSpecs (or other protective glasses)
- Neuro-optometry referral
- Symptom tracking checklist



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Symptom tracker

[illegible]

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Clinical Profile-Vestibular

Common Vestibular Symptoms:

- Dizziness
- Headaches
- Motion sensitivity/sickness
- Disorientation
- Nausea
- Impaired Spatial Awareness
- Balance Disturbances



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Clinical Profile-Vestibular



Vestibular Assessments (at no cost)

- Vestibular-Ocular Reflex (VOR)
- Dizziness-Handicap Inventory (DHI)

Balance/Mobility Assessments (at no cost)

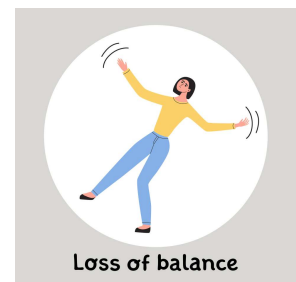
- Balance Error Scoring System (BESS)
- Functional Gait Assessment (FGA)
- TUG/TUGCog

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Clinical Profile-Vestibular

Physical Therapy Considerations and Interventions

- Vestibular rehabilitation
- Balance re-training
- Symptom tracking
- Physical and Cognitive endurance
- Environmental Progression



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Clinical Profile-Autonomic Dysfunction

Common Autonomic Dysfunctions:

- “Fight or flight”
- Increased heart rate
- Increased blood pressure
- Increased respiratory rate



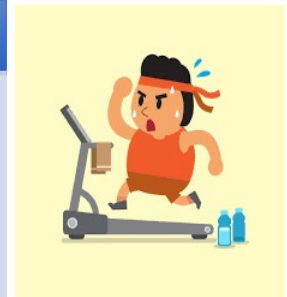
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Clinical Profile-Autonomic Dysfunction



Autonomic Dysfunction Assessments (at no cost)

- Buffalo Concussion Treadmill Test
- Buffalo Concussion Bike Test



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Clinical Profile-Autonomic Dysfunction

Physical Therapy Considerations and Interventions

- Bed positioning
- Sleep habits
- Diet/hydration
- Compression stockings
- Medication needs



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Consultative Partners



Audiology	NeuroPsych	Social Work/Counseling	Neuro-Chiropractor
Neuro-optometry/Neuro-ophthalmology	Neurology	Physiatry	Vocational Rehab
Case Managers	Employers	Driving Rehab	Pain specialists
Acupuncture	ENT	PCP	Cranial sacral (CST)

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Concussion recovery

Immediately (first couple days)	Gradual return	Introduction to activity without return of symptoms
<ul style="list-style-type: none"> • Total cognitive and relative rest • Until symptom free x 24 hours • Minimize Activity • Physical <ul style="list-style-type: none"> • Yoga • Meditation/Breathing • Stretching/walking 	<ul style="list-style-type: none"> • Progressive • Patient Specific • Symptom Specific 	<ul style="list-style-type: none"> • Half days • Rest breaks • Monitoring of symptoms • Communication



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Return to work

Workplace Accommodations Examples

- Adjusted schedules and productivity expectations
- Structured rest breaks
- Temporary reassignment to alternative roles (i.e. groundwork vs ladder d/t vestibular concerns)
- Adjustments to lighting conditions, alternative computer monitor settings for light sensitivity and visual processing
- Noise control like ear plugs, noise canceling, relocation of workspace to accommodate noise sensitivity
- Provision of written and verbal instructions like permission to record meetings



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Return to School/Learn

Returning to School/Work and Accommodations

- Symptom based
- Commonly including:
 - Increased time to complete tasks
 - Increased access to assistance with note taking
 - Testing/assignment make ups
 - 15-minute breaks throughout the day
- Changes over time to match the current needs through recovery
- Gradually increasing their activity level over time until no more need for accommodations



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Return to Sports

- Progresses through the protocol as symptoms allow
- Symptoms endorsed, then wait 24hrs and repeat same step, but change activity
- Only progress one stage per day
- ONLY SYMPTOM BASED
- Neurocog scores recovery after symptoms
- SCAT

Stage	AIM	ACTIVITY	GOAL
1	Symptom-limited activity (within 24hrs)	Daily activities not provoking symptoms	Gradual reintroduction of work/school activities
2	Light aerobic exercise (within 24hrs)	Walking or stationary cycling and slow-medium pace, no resistance	Increased heart rate
3	Sport-specific exercise (symptom based)	Running or skating drills, no head impact activities	Add movement
4	Non-contact training drills (symptom based)	Harder training drills, may start progressive resistance training	Exercise, coordination, increased thinking
5	Full contact practice (symptom based)	Following medical clearance, participating in normal training activities	Restore confidence and assess functional skills by coaching staff
6	Return to Sport	Normal Game Play	-



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Post Concussive Syndrome

Standard Concussion Recovery time

- Balance returns <7 days (more subjective like BESS scores vs. DGI, FGA)
- Symptoms return to baseline in 5-14 days
- Vestibular and oculomotor screening scores returning to baseline between 1-2 weeks
- Neurocognitive scores on CNT return to baseline 21-28 days
- What if this isn't the case?



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Challenges to Recovery

- Severity of Injury/ Affected Area(s) of the Brain
 - # Clinical Profiles
 - Signs/Symptoms
- Time since Injury
 - Post-Concussion Syndrome
- Access to
 - Medical evaluation
 - Neurorehab diagnostics/treatment
- Limited support systems
- Finances



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Tips for prevention

- Safe Driving/Riding
 - Seat Belts
 - Not driving under the influence
- Choose a sports program that enforces rules for safety and avoids drills and plays that increase the risk for head impact
- Wear a helmet/ Appropriate headgear when
 - Participating in contact sports
 - Riding a bike/ scooter/horse, roller skating, skateboarding, skiing/snowboarding
 - Operating a motorcycle, snowmobile, ATV



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Tips for prevention

- Preventing Falls
 - Evaluating Fall risk and reviewing fall risk/prevention strategies
 - Home Safety Modifications
 - Strength and Balance exercises
 - Medication review with your provider
 - Visual Exam/ Annual Eye Doctor Visits
- Safer living and play areas for children
 - Window guards
 - Safety gates
 - Soft material in outdoor play areas



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In summary

- Concussions/mTBI have large effects on cognitive function and balance acutely
- Symptoms can widely vary between physical, cognitive, emotional
- The greater the severity and number of symptoms=slower recovery
- Most recover in 10-14 days with large majority in 1 month
- Preinjury mental health diagnoses and prior concussions are risks for persistent symptoms



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Thank you!

National Brain Injury Information Center

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