

## Lesson Two – Concussion Signs and Symptoms

### Lesson Overview

*Concussion has potentially debilitating signs and symptoms, including sleep disturbance, headache, changes in vision and hearing, confusion, short-term memory deficits, and irritability. Participants will learn to recognize symptoms and signs of concussion.*

### Lesson Objectives

After completing this lesson, participants will be able to:

- Identify, physical, sensory, cognitive, and behavioral symptoms and signs of concussion.
- Identify physical, cognitive, and behavioral signs and symptoms of more severe TBI.
- Describe Second Impact Syndrome.
- Describe Post-Concussion Syndrome.

### Lesson at a Glance

| Activity | Materials                                                                                                                                                                                                                                                                                                                                                                                                                 | Preparation                                                                                                                                                                                                                                                                                                      | Approximate class time |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| FOCUS    | <ul style="list-style-type: none"> <li>• <i>Concussion Signs and Symptoms</i> slide presentation</li> <li>• <i>Concussion Signs and Symptoms Chart</i></li> <li>• Signs and Symptoms of Traumatic Brain Injury poster</li> </ul>                                                                                                                                                                                          | <ol style="list-style-type: none"> <li>1. Prepare to show <i>Concussion Signs and Symptoms</i> slide presentation.</li> <li>2. Print/photocopy <i>Concussion Signs and Symptoms Chart</i> (one per participant).</li> <li>3. Hang poster for reference.</li> <li>4. Internet access ready for videos.</li> </ol> | 10–20 minutes          |
| LEARN    | <ul style="list-style-type: none"> <li>• Concussion Education Kit</li> <li>• <i>Concussion Signs and Symptoms</i> slide presentation</li> <li>• Signs and Symptoms of Traumatic Brain Injury poster</li> <li>• <i>Concussion Experience Checklist</i></li> <li>• <i>Interview Questions and Answers</i> worksheet</li> <li>• <i>On the Grasshopper and Cricket</i> worksheet</li> <li>• <i>Basic Math Quiz</i></li> </ul> | <ol style="list-style-type: none"> <li>1. Print/photocopy <i>Concussion Experience Checklist</i> (one per participant).</li> <li>2. Set up each simulation station.</li> <li>3. Check to ensure the Concussion Education Kit materials are ready to use.</li> </ol>                                              | 60-90 minutes          |
| REVIEW   | <ul style="list-style-type: none"> <li>• <i>Concussion Signs and Symptoms Quiz</i></li> <li>• <i>Concussion Signs and Symptoms Quiz – Answer Key</i></li> </ul>                                                                                                                                                                                                                                                           | <ol style="list-style-type: none"> <li>1. Print/photocopy the <i>Concussion Signs and Symptoms Quiz</i> (one per participant).</li> </ol>                                                                                                                                                                        | 20 minutes             |

## Lesson Two – Concussion Signs and Symptoms

# FOCUS: Concussion Signs and Symptoms

10-20 minutes

### Purpose:

Concussion has potentially debilitating signs and symptoms, including sleep disturbance, headache, changes in vision and hearing, confusion, short-term memory deficits, and irritability. Participants will learn to recognize symptoms and signs of concussion.

### Materials:

- *Concussion Signs and Symptoms* slide presentation
- *Concussion Signs and Symptoms Chart*
- Signs and Symptoms of Traumatic Brain Injury poster

### Facilitation Steps:

1. Begin by introducing concussion signs and symptoms. Give each participant the *Concussion Signs and Symptoms Chart* to complete as they listen. Display the poster as an additional reference source for the lesson.

**Slide 2:** Symptoms of Concussion can vary depending on which area of the brain was damaged, which will be more pronounced in cases of more severe injury where focal damage has occurred from a brain contusion or hemorrhage. However, there is a general constellation of symptoms that can be grouped as physical, sensory, cognitive, and behavioral.

### Slide 3: Physical signs and symptoms:

- Brief loss of consciousness from seconds to a few minutes
- Headache, plus or minus nausea, plus or minus vomiting
- Fatigue/ drowsiness and sleep disturbances (such as insomnia, worsened sleep quality, or excessive sleep)
- Dizziness/vertigo, incoordination, impaired balance

### Slide 4: Sensory signs and symptoms:

- Vision: transient blurred vision, seeing “stars,” inability to maintain focus for an extended

amount of time, or sensitivity to light (aka photophobia)

- Hearing: ear ringing (aka tinnitus) and sensitivity to sound (aka phonophobia or hyperacusis)
- Taste or smell: partial loss or alteration of taste or smell

### Slide 5: Cognitive signs and symptoms:

- Feeling dazed, confused, or disoriented immediately following the injury
- Trouble with short-term memory (such as misplacing items, forgetting new information or parts of conversations, and names) or loss of memory for events surrounding the head injury (aka post-traumatic amnesia)
- Trouble maintaining focus, concentration, and attention
- Mild trouble processing language (either comprehension or expression verbally or in writing) such as occasional trouble coming up with names
- Difficulty planning and organizing (executive function)
- Losing track of time or why you went somewhere
- Slowed processing speed

### Slide 6: Behavioral signs and symptoms:

- Irritability
  - Poor ability to handle stress
  - Anxiety, depression, and rapid mood fluctuations
  - Impulsive behavior (compromised ability to inhibit inappropriate reactions or urges)
2. If time permits, share a short video about concussion signs and symptoms. Here are a few suggested links but there are many others.

<https://www.youtube.com/watch?v=SKPHF6ZOarM>

<https://www.youtube.com/watch?v=wMlpP2dqfW0>

[https://www.youtube.com/watch?v=0Gi2Uz\\_yF9w](https://www.youtube.com/watch?v=0Gi2Uz_yF9w)

Name: \_\_\_\_\_ Class: \_\_\_\_\_

# Concussion Signs and Symptoms Chart

Complete the chart below from lecture information, slides, posters and/or Internet sources.

|                   | Signs (Visible to others) | Symptoms (Felt by Affected Individual) |
|-------------------|---------------------------|----------------------------------------|
| <b>Physical</b>   |                           |                                        |
| <b>Sensory</b>    |                           |                                        |
| <b>Cognitive</b>  |                           |                                        |
| <b>Behavioral</b> |                           |                                        |

## Lesson Two – Concussion Signs and Symptoms

# LEARN: Concussion Simulation Experience and Beyond Concussion

60-90 minutes

### Purpose:

More severe head trauma or serial repeated concussions that occur without adequate time to heal and recover lead to more serious and prolonged deficits. Participants will learn about more serious potential consequences of moderate to severe TBI. They will also learn to recognize second impact syndrome, post-concussion syndrome, and risk factors for development of these syndromes.

### Materials:

- Concussion Education Kit
- *Concussion Signs and Symptoms* slide presentation
- Signs and Symptoms of Traumatic Brain Injury poster
- *Concussion Experience Checklist*
- *Interview Questions and Answers* worksheet
- *On the Grasshopper and Cricket* poem worksheet
- *Basic Math Quiz* worksheet

### Facilitation Steps:

1. Concussion Simulation Experience: Set up stations around the room.
  - Station 1: Interview a classmate. Provide copies of the interview worksheet enough for each student to complete.
  - Station 2: Poetry Time. Provide copies of the poem worksheet, *On the Grasshopper and Cricket* with questions for participants to answer.
  - Station 3: Math Time. Provide copies of the *Basic Math Quiz* for participants to complete.
  - Station 4: Writing Time. Write a sentence on the board. Provide paper at the station for participants to write on.
  - Station 5: Screen Time. Provide a tablet at the station or have participants use their

cell phone to read something. Provide a specific question if desired for participants to research.

- Station 6: Play Catch! Provide a small ball or paper that can be used.
  - Station 7: Walk the line. Use tape to create a 10-foot line on the floor. Or set the station up in an area where there is an existing line on the floor to use.
  - Station 8: Provide a chair.
  - Station 9: Provide an area with enough space to do pushups or jumping jacks.
  - Station 10: Provide a chair.
2. Pair up participants and give each pair the concussion glasses and headphones with MP3 player.
  3. Give each participant the Concussion Experience Checklist handout to complete.
  4. Assign each pair of participants to begin at a specific station or with a specific task. Both participants should have the opportunity to wear the concussion simulation glasses and headphones and complete all of the tasks on the list. Participants should rotate to each station upon both of them completing the task.
  5. Continue slide presentation

**Slide 7:** Moderate to severe TBI can result in more extreme findings.

**Slide 8:** Physical symptoms and signs

- Loss of consciousness (LOC) for more than a few minutes, even hours or days (coma)
- Profoundly impaired coordination or balance
- Slurring of speech (dysarthria)
- Impaired ability to swallow food or water (dysphagia)
- Persistent double vision (diplopia)

**Slide 9:** A so-called thunderclap headache (worst headache of one's life), which may suggest

subarachnoid hemorrhage, or a progressively worsening headache, especially when lying down, which may suggest swelling of the brain.

**Slide 10:** Inappropriate dilation or constriction of one or both pupils

- Results in differently-sized pupils (called anisocoria)
- Can be caused by increased ICP, which moves brain tissue outside of their usual location (a process called herniation)
  - Herniated brain tissue presses on nerve (CN) III, which controls certain eye movements and the pupillary response to light

**Slide 11:** Drainage of clear fluid or blood from the nose or ears.

- Clear fluid might be cerebrospinal fluid, the fluid that bathes the brain and spinal cord
- Blood suggests a skull fracture

**Slide 12:** Presence of swelling or bruising behind the ears or around the eyes, known as racoon eyes or Battle's sign, which suggest a fracture of the base of the skull (aka basilar skull fracture).

**Slide 13:** Focal weakness or numbness from injury to the motor or sensory cortices or their pathways from the brain to the spinal cord (e.g. hemiparesis, weakness on one side of the body).

**Slide 14:** Central sleep apnea, a disordered breathing pattern during sleep. It occurs when the brain's area that controls your breathing does not function correctly during sleep. It can result from brainstem damage. Obstructive sleep apnea is caused by blockages in the upper airway that restrict oxygen to the body.

**Slide 15:** Convulsions or seizures, which can occur in the immediate aftermath of TBI or later (early and late post-traumatic seizures). They can occur in mild TBI but more frequently in more severe TBI.

**Slide 16:** Cognitive and Behavioral symptoms

- Profound speech deficits, including aphasia (inability to comprehend or express language) and dysarthria (slurring of speech) and inability to name objects (anomia)
- Difficulty recognizing faces
- Inability to copy a simple drawing

- Profound confusion, not knowing where you are or even who you are
- Profound behavior changes that appear suddenly, including complete lack of inhibition such as uncontrolled aggression, out-of-control spending, or reckless sexual promiscuity

**Slide 17:** Head Injury Red Flags – symptoms and signs where immediate medical attention is recommended

**Slide 18:** Second Impact Syndrome

- Used to describe a rare phenomenon of sudden severe brain swelling that occurs when an individual sustains a second concussion without fully recovering from an initial concussion
  - There is some controversy as to whether the phenomenon truly exists because it is so rare and poorly characterized
  - Is frequently associated with death or severe permanent disability
- Risk factors include:
  - Younger age: including children, teenagers, and young adults
  - Male gender: may be due to genetics or simply greater likelihood of participation in contact sports
  - Persistent symptoms of prior concussion: this is an important consideration regarding return to play; symptoms of prior concussion should be completely resolved
  - Participation in high-risk contact sports: American football, boxing, rugby, karate

**Slides 19:** Post-Concussion Syndrome

- Phenomenon of persistent symptoms beyond the expected recovery period of weeks to months
- Symptoms are those typical for concussion/mild TBI, such as headache, dizziness, altered sleep, and impaired focus and concentration
- Risk factors include:
  - Increasing age
  - Psychiatric co-morbidities, such as depression, anxiety, and PTSD
  - Psychosocial stressors and poor coping skills
  - Female gender

Name: \_\_\_\_\_

Class: \_\_\_\_\_

## Concussion Experience Checklist

Instructions: Do each task while wearing the Concussion Simulator. Record your observations.

| Task                                                                                                                                                                                                                     | Rate the difficulty to complete each 1(easy) – 5 (hard) |   |   |   |   | What did you observe about your body as you completed the task? |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|---|---|---|---|-----------------------------------------------------------------|
|                                                                                                                                                                                                                          | 1                                                       | 2 | 3 | 4 | 5 |                                                                 |
| Station 1: Interview a classmate. Ask 5 questions and write down answers to the questions. Use the worksheet provided to record your interview.                                                                          |                                                         |   |   |   |   |                                                                 |
| Station 2: Poetry Time. Read a poem and answer questions in the space provided.                                                                                                                                          |                                                         |   |   |   |   |                                                                 |
| Station 3: Math Time. Complete some basic math problems in the space provided.                                                                                                                                           |                                                         |   |   |   |   |                                                                 |
| Station 4: Writing Time. Copy a sentence off the board and sign your name at the bottom.                                                                                                                                 |                                                         |   |   |   |   |                                                                 |
| Station 5: Screen Time. Try to read information off a computer screen, tablet or cell phone.                                                                                                                             |                                                         |   |   |   |   |                                                                 |
| Station 6: Play Catch! Play catch with a classmate. Use a small ball if available, or a crumpled piece of paper. Start close together and move further apart.                                                            |                                                         |   |   |   |   |                                                                 |
| Station 7: Walk the line. Walk a line on the floor without falling off.                                                                                                                                                  |                                                         |   |   |   |   |                                                                 |
| Station 8: Power nap. Close your eyes for one minute as if sleeping.                                                                                                                                                     |                                                         |   |   |   |   |                                                                 |
| Station 9: Workout. Do 5-10 pushups or 10 jumping jacks. Choose a different physical activity if you cannot do either of these.                                                                                          |                                                         |   |   |   |   |                                                                 |
| Station 10: Stand up, sit down. Sit in a chair. Whenever ready, stand up and down 5 times as fast as possible. You have to stand up fully and sit down with your butt touching the chair. Now do it with your eyes shut. |                                                         |   |   |   |   |                                                                 |

How did this inform you about the problems someone who has suffered a TBI is going through?

Name: \_\_\_\_\_ Class: \_\_\_\_\_

## **Interview Questions and Answers**

**1.**

**2.**

**3.**

**4.**

**5.**

Name: \_\_\_\_\_ Class: \_\_\_\_\_

## On the Grasshopper and Cricket

BY JOHN KEATS

The Poetry of earth is never dead:

When all the birds are faint with the hot sun,

And hide in cooling trees, a voice will run

From hedge to hedge about the new-mown mead;

That is the Grasshopper's—he takes the lead

In summer luxury,—he has never done

With his delights; for when tired out with fun

He rests at ease beneath some pleasant weed.

The poetry of earth is ceasing never:

On a lone winter evening, when the frost

Has wrought a silence, from the stove there shrills

The Cricket's song, in warmth increasing ever,

And seems to one in drowsiness half lost,

The Grasshopper's among some grassy hills.

1. What is main theme of the poem?
2. Where do birds take rest in hot summer day?
3. Where do grasshoppers take rest when he tired?
4. In which season do crickets sing?

Name: \_\_\_\_\_ Class: \_\_\_\_\_

## Basic Math Quiz

$$35 + 42 =$$

$$88 / 22 =$$

$$23 \times 66 =$$

$$9 \times 72 =$$

$$427 - 322 =$$

$$88 - 43 =$$

$$16 + 31 =$$

$$324 / 9 =$$

From Jackson's house to Mia's house is 2.5 miles. On Friday, Jackson rode his bike to and from Mia's house five times. How many miles did he ride his bike?

## Lesson Two – Concussion Signs and Symptoms

# REVIEW: Concussion Signs and Symptoms Quiz

**20 minutes**

**Purpose:**

Participants will review the key information learned about Concussion signs and symptoms. This assessment will help instructors see knowledge gained over the lesson.

**Materials:**

- *Concussion Signs and Symptoms Quiz*
- *Concussion Signs and Symptoms Quiz – Answer Key*

**Facilitation Steps:**

1. Give each participant the *Concussion Signs and Symptoms Review Quiz*. Give them 10 minutes to complete the quiz.
2. Have participants self-check and peer check the quiz answers as you share from the answer key.

Name: \_\_\_\_\_ Class: \_\_\_\_\_

## Concussion Signs and Symptoms Quiz

1. Which of the following is not a physical sign or symptom of concussion?
  - a. Fatigue/ drowsiness with sleep disturbances
  - b. Enhanced alertness
  - c. Headache
  - d. Dizziness/vertigo
2. Which of the following is not a sensory sign or symptom of concussion?
  - a. Transient blurred vision
  - b. Sensitivity to light
  - c. Ear ringing
  - d. Improved night vision
3. Which of the following is not a cognitive sign or symptom of concussion?
  - a. Feeling dazed, confused, or disoriented immediately following the injury
  - b. Trouble with short-term memory
  - c. Hearing voices that tell you to harm yourself
  - d. Slowed processing speed
4. Which of the following is not a behavioral sign or symptom of concussion?
  - a. Uncontrollable hunger
  - b. Irritability
  - c. Rapid mood fluctuations
  - d. Impulsive behavior
5. Which of the following is not a physical sign or symptom of moderate to severe TBI?
  - a. Raccoon eyes
  - b. Clear fluid coming from the nose or ears
  - c. Mild headache
  - d. Coma

6. Which of the following is false regarding the rare phenomenon of sudden severe brain swelling that occurs when an individual sustains a second concussion without fully recovering from an initial concussion?
  - a. It is called second-impact syndrome
  - b. Older age increases the risk
  - c. It most frequently affects male gender athletes
  - d. It is frequently associated with death or severe permanent disability
7. Regarding post-concussion syndrome, which of the following is false?
  - a. Symptoms are atypical for concussion
  - b. Female gender increases the risk
  - c. Poor coping skills and psychosocial stressors increase the risk
  - d. Psychiatric comorbidities, such as depression, anxiety, and PTSD, increase the risk

## TBI Signs and Symptoms Quiz – Answer Key

1. Which of the following is not a physical sign or symptom of concussion?
  - a. Fatigue/ drowsiness with sleep disturbances
  - b. Enhanced alertness**
  - c. Headache
  - d. Dizziness/vertigo
2. Which of the following is not a sensory sign or symptom of concussion?
  - a. Transient blurred vision
  - b. Sensitivity to light
  - c. Ear ringing
  - d. Improved night vision**
3. Which of the following is not a cognitive sign or symptom of concussion?
  - a. Feeling dazed, confused, or disoriented immediately following the injury
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  - c. Hearing voices that tell you to harm yourself**
  - d. Slowed processing speed
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## Sources

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13. Physiopedia. (n.d.). *Second Impact Syndrome*. Retrieved May 11, 2021, from [https://www.physio-pedia.com/Second\\_Impact\\_Syndrome](https://www.physio-pedia.com/Second_Impact_Syndrome)