



## Basic Information on Brain Injury

### Traumatic vs. non-traumatic brain injury

Brain injury can be called by different names, like concussion, shaken baby syndrome, and head injury. The brain can be hurt in many different ways; injuries to the brain are typically classified as non-traumatic or traumatic.

Non-Traumatic injuries occur as a result of something internal to the brain... like stroke, lack of oxygen, infection, brain tumors, and exposure to toxic substances. The challenges someone with a non-traumatic injury faces can be different, but are often very similar to those faced by someone with a traumatic injury.

Traumatic injuries fall into two categories:

- *Open* head injuries are those in which the skull is crushed or seriously fractured. Open head injuries also happen when the skull is penetrated, as in a gunshot wound.
- *Closed* head injuries, in which the skull is not damaged, occur much more often, usually because of a car accident or fall.

### How does the brain work?

The brain is divided into different parts called *lobes* and *hemispheres*. While the whole brain works together to get things done, its different parts are responsible for different jobs.

## What are some noticeable changes after brain injury?

The **Cerebellum** (just above the stem) controls balance and coordination.

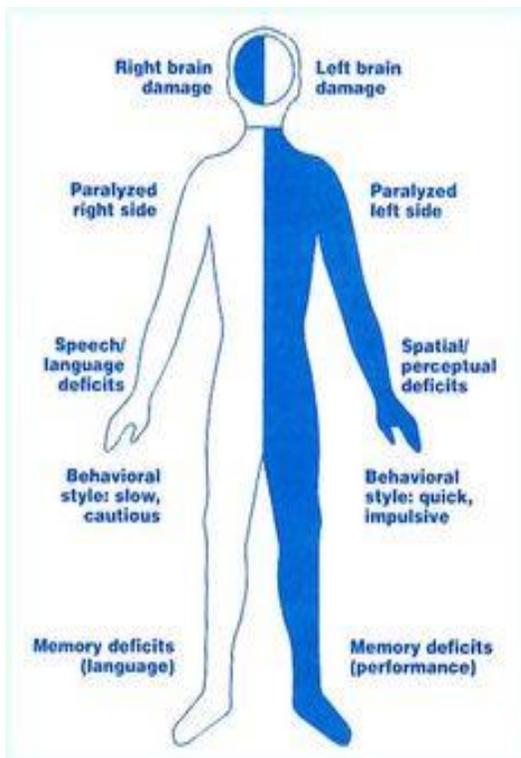
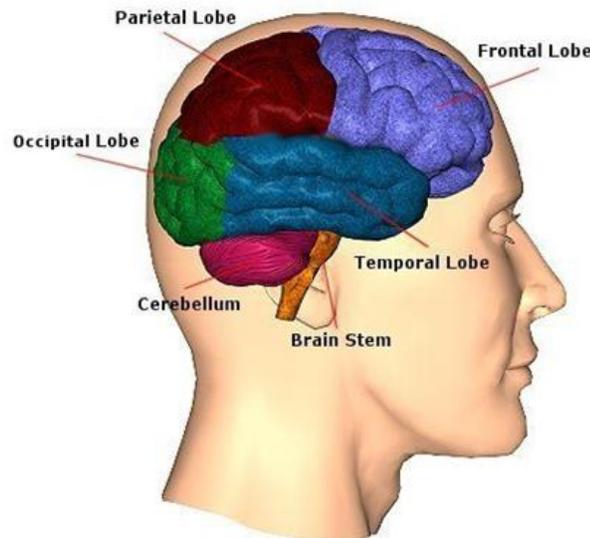
The **Brain Stem** (the bottom of the brain) is responsible for basic life functions like heart beat, breathing, and blood pressure.

The **Occipital lobe** (at the back of the head) controls vision.

The **Temporal lobes** (on the sides of the head) manage speech, language, memory, and hearing.

The **Parietal lobes** (on the top of the head) interpret sensations and the position of our body and other objects.

The **Frontal lobe** (at the front of the head) helps us control our emotions and impulses, motivates us, and helps us plan and make good decisions.



The changes seen after a brain injury depends on a number of factors such as (but not limited to): the severity of the injury, where and how the damage was sustained, how quickly the person was diagnosed and treated, their general health and age at the time of injury.

**Common physical changes** after brain injury include difficulty walking, trouble with balance, falling or bumping into things, dizziness, spasticity (very tight muscles), and poor coordination, difficulty grasping objects, headaches, nausea, fatigue, and seizures.

**Common sensory changes** after brain injury include vision, hearing, smell and taste disturbances

**Common cognitive problems** after brain injury include trouble with memory, concentration and attention, following directions, finding the right word, problem solving, abstract thinking, organization, planning, social judgment, decision making, self-monitoring, and initiating tasks.

**Common behavioral/emotional changes** after brain injury include irritability, mood swings, acting without thinking, difficulty accepting someone else's point of view, sadness, low energy, low self-esteem, hostility, depression, and anxiety.

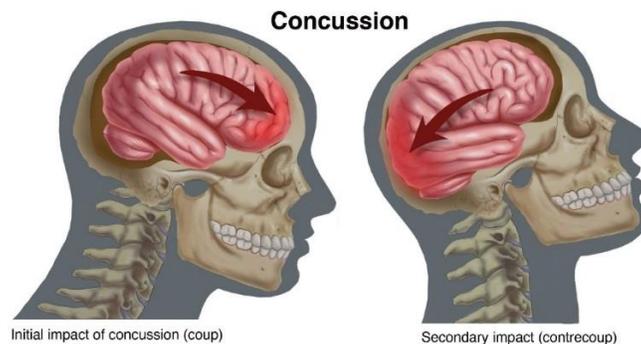
## What about concussion?

Most often caused by blows to the head, these traumatic brain injuries usually result in temporary symptoms but more serious concussions can do permanent damage. The majority of sports related concussions occur without loss of consciousness or obvious neurological signs.

- The Seattle Sports Concussion Research Collaborative estimates 1 million and 1.9 million concussions occur annually among kids aged 18 and younger due to sports and recreation injuries.
- Data from the University of Pittsburgh Medical Center suggests 5 of 10 concussions go unreported or undetected, and 2 in 10 high-school athletes who play contact sports will suffer a concussion this year.

Several things happen to the brain during traumatic injuries. The effects of some of these can go on for quite some time after the actual accident.

- The brain bounces around in the skull and rubs against the bony ridges on the inside of the skull; *this is known as a coup/contra-coup injury*. It can cause bleeding, swelling and increased pressure in the brain.



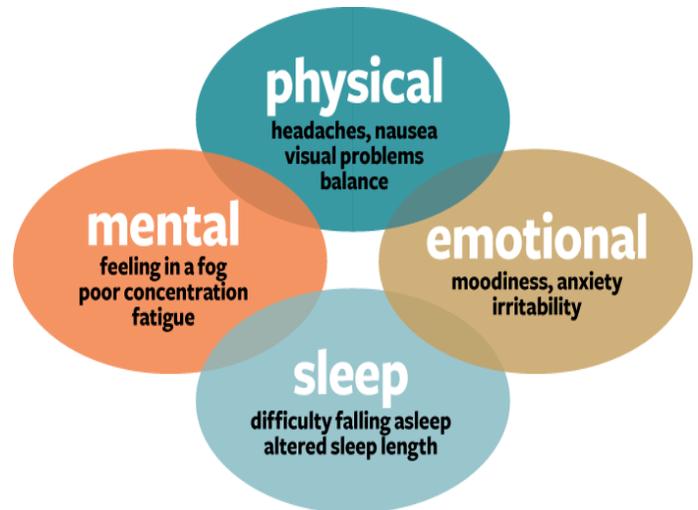
Most individuals recover in 10–14 days. If the symptoms listed below persist beyond that time frame, seek treatment from someone who understands brain injury.

**Levels of severity:** There is some controversy about grading the severity of concussions, but it does provide some guidelines that can be helpful:

**Grade 1:** Confusion lasting less than 15 minutes

**Grade 2:** Confusion and amnesia lasting more than 15 minutes

**Grade 3:** Brief unconsciousness, more serious amnesia



*After a brief period of rest during the acute phase (24–48 hours) after injury, patients can be encouraged to become gradually and progressively more active while staying below activity that worsens their cognitive and physical symptoms. And it's OK to let them sleep.*

#### What can I do to help recovery?

Although the physical, sensory, cognitive and psychological changes may improve with treatment and time, they may not go away completely. The key for most survivors and caregivers is learning how to recognize the difficulties that have been caused by their brain injury and how to manage them. The best way to do that is through the use of compensatory strategies, which involves using different ways to accomplish a task that is more difficult since the injury.



**Compensatory strategies** focus on a person's intact skills and strengths to help them be successful with overcoming challenges in the areas of self-care, attention, memory, behavior. We all use some of these methods. These strategies can be simple, like writing things down in notebooks, posting notes on the refrigerator, or carrying a pocket calendar; some can be more complex, like smart phones, medication alarms, or emergency response systems. Compensatory strategies do not fix the underlying problem; it takes more time, energy, and attention to make them work, but when used consistently, they can dramatically improve function.

**Recovery** from brain injury can last a lifetime, even though formal rehabilitation ends. When that happens, the survivor and those who care about him or her need to find ways to manage the day to day challenges and continue the

recovery process. Good rehabilitation lays a foundation for managing opportunities and challenges, and life in general.

It is important for the individual who has sustained a brain injury to have a structured environment and setting. The environment and the structured setting can play an important role in the rehabilitation and recovery process.

- Provide consistent schedule or routine, (same times for morning routine, etc.).
- Arrange living quarters for easy access to items used daily (i.e. bed, dresser, closet, bathroom, etc.) Keep items within reach and in a consistent location.
- Make sure living quarters allows for safe and easy mobility.
- Ensure adequate lighting is available. It is important to note that fluorescent lighting may be too bright for the individual.
- Display familiar pictures of family, friends, and pets.
- Use objects familiar to the individual.
- Be mindful that too much noise/audio may be overwhelming for the individual.
- Be mindful that the individual may have difficulty concentrating if there is excess noise/activity in the room.
- Go outside and get a breath of fresh air.
- Too many people can be overwhelming.
- Speak with minimal or no background noise. (Hearing other sounds such as water running, the TV or radio, background conversation, airplanes, dog barking, etc. can be very distracting.)
- Speak of familiar names and places; talk of shared interests and experiences.
- Converse when the individual is awake and alert, not tired.
- Encourage communication

### **Where can I get help?**

#### **Brain Injury Association of Virginia**

- 1.800.444.6443 - Connect to information and resources via telephone or Chat [www.biav.net](http://www.biav.net)  
**Virginia Department for Aging and Rehabilitative Services Brain Injury Services  
Coordination Unit**
  - <https://www.vadars.org/cbs/biscis.htm>  
**Centers for Disease Control and Prevention**
  - <https://www.cdc.gov/traumaticbraininjury/index.html>



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