



# Definition of mild traumatic brain injury

*Developed by the Mild Traumatic Brain Injury Committee of the Head Injury Interdisciplinary Special Interest Group of the American Congress of Rehabilitation Medicine*

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## Definition

A patient with mild traumatic brain injury is a person who has had a traumatically induced physiological disruption of brain function, as manifested by at least one of the following:

1. any period of loss of consciousness;
2. any loss of memory for events immediately before or after the accident;
3. any alteration in mental state at the time of the accident (eg, feeling dazed, disoriented, or confused); and
4. focal neurological deficit(s) that may or may not be transient;

but where the severity of the injury does not exceed the following:

- loss of consciousness of approximately 30 minutes or less;
- after 30 minutes, an initial Glasgow Coma Scale (GCS) of 13–15; and
- posttraumatic amnesia (PTA) not greater than 24 hours.

## Comments

This definition includes:

1. the head being struck,
2. the head striking an object, and
3. the brain undergoing an acceleration/deceleration movement (ie, whiplash) without direct external trauma to the head.

It excludes stroke, anoxia, tumor, encephalitis, etc. Computed tomography, magnetic resonance imaging, electroencephalogram, or routine neurological evaluations may be normal. Due to the lack of medical emergency, or the realities of certain medical systems, some patients may not have the above factors medically documented in the acute stage. In such cases, it is appropriate to consider symptomatology that, when linked to a traumatic head injury, can suggest the existence of a mild traumatic brain injury.

## Symptomatology

The above criteria define the event of a mild traumatic brain injury. Symptoms of brain injury may or may not persist, for varying lengths of time, after such a neurological event. It should be recognized that patients with mild traumatic brain injury can exhibit persistent emotional, cognitive, behavioral, and physical symptoms, alone or in combination, which may produce a functional disability. These symptoms generally fall into one of the following categories, and are additional evidence that a mild traumatic brain injury has occurred:

1. physical symptoms of brain injury (eg, nausea, vomiting, dizziness, headache, blurred vision, sleep disturbance, quickness to fatigue, lethargy, or other sensory loss) that cannot be accounted for by peripheral injury or other causes;
2. cognitive deficits (eg, involving attention, concentration, perception, memory, speech/ language, or executive functions) that cannot be completely accounted for by emotional state or other causes; and
3. behavioral change(s) and/or alterations in degree of emotional responsiveness (eg, irritability, quickness to anger, disinhibition, or emotional lability) that cannot be accounted for by a psychological reaction to physical or emotional stress or other causes.

## Comments

Some patients may not become aware of, or admit, the extent of their symptoms until they attempt to return to normal functioning. In such cases, the evidence for mild traumatic brain injury must be reconstructed. Mild

traumatic brain injury may also be overlooked in the face of more dramatic physical injury (eg, orthopedic or spinal cord injury). The constellation of symptoms has previously been referred to as minor head injury, post-concussive syndrome, traumatic head syndrome, traumatic cephalgia, post-brain injury syndrome and posttraumatic syndrome.

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