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## 3.1 Traumatic Brain Injury

### Authors

Stacy M. Phillips, MSW

Maria M. Rossi, PhD

Jon Parker, MAMFT, NCC, LPC, LMHC,

Heidi Radunovich, PhD, Licensed Psychologist

Justin Foxworth HMCS (SW/AW/FMF), USN, Retired

Michelle A. Parisi, PhD RDN

## Traumatic Brain Injury

Traumatic brain injury (TBI) can occur when there is an impact to a person's head. This injury can be sustained during military service, deployment, or even everyday life events. An auto or motorcycle accident. A football tackle. An unfortunate fall. Explosions experienced during combat or training exercises. All these things—within others—can cause head injuries. Head injuries can damage the brain.

### How is the damage done?

A sudden movement of the head and brain can cause the brain to shake or twist inside the skull, injuring the brain cells, breaking blood vessels, and creating chemical changes. This damage is called a traumatic brain injury and can affect the body's normal function.

### What can cause a TBI?

TBI can result when the head suddenly and violently hits an object or when an object, such as an explosive blast to the head, a bullet, or a shattered piece of skull, goes through the brain tissue, disrupting the brain's normal function.

Some people may not realize they have a TBI. Some signs or symptoms can appear right after the traumatic event, although for others, it may appear a few days or weeks later (Figure 1.3a). The symptoms of a TBI can be mild, moderate, or severe, depending on the extent of the damage (*Traumatic Brain Injury (TBI)*. 2023).

Symptoms of a Mild TBI	Symptoms of a Moderate TBI
Headaches Nausea or vomiting, Confusion Lightheadedness Dizziness or loss of balance, Blurred vision, or tired eyes. Sensory problems may include: Ear ringing, Bad mouth taste, Inability to smell, Sensitivity to light or sound. Changes in sleep patterns can occur Behavior or mood swings, Trouble with memory or concentration Problems, attention, or thinking	May show these same symptoms but may also have: A headache that gets worse or does not go away Repeated vomiting or nausea Convulsions or seizures An inability to awaken from sleep Dilation of one or both pupils of the eyes Slurred speech Weakness or numbness in the extremities Clear fluids draining from the nose or ears Loss of coordination Increased confusion Restlessness, or agitation.

**Figure 3.1a**

*Traumatic Brain Injury Symptoms by Degree of Severity*

**Source**

*Traumatic Brain Injury (TBI). 2023*

**Traumatic Brain Injury**

<https://www.ninds.nih.gov/health-information/disorders/traumatic-brain-injury-tbi>

**TBIs can be difficult to diagnose and treat**

Brain damage sustained from a TBI can sometimes be subtle, underdiagnosed or difficult to diagnose, and, therefore, to treat. This damage can result in changes in memory, attention difficulties, personality changes, and/or behavior changes. A TBI can affect the brain region that processes emotions such as fear, anxiety, and aggression. Damage to the cerebral cortex affects brain functions, including reasoning, organization, planning, execution, attention, and problem-solving. Damage in these areas can also cause poorer cognitive functioning (*Traumatic Brain Injury, 2023*).

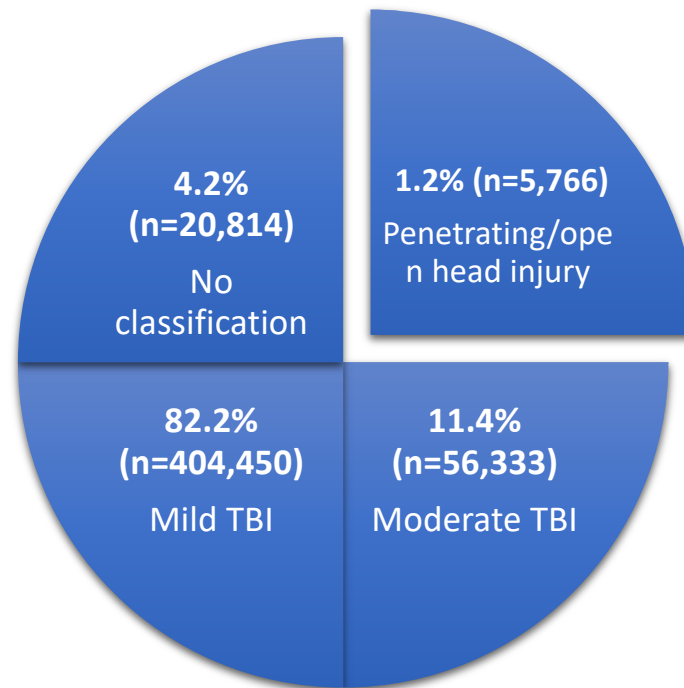


## **DID YOU KNOW?**

*From 2000-2023, a total of 463,392 U.S. service members were diagnosed with a Traumatic Brain Injury.*

### Prevalence Among Service Members

According to the Department of Defense (DOD) report entitled "2000-2023 Q3 Worldwide Numbers for TBI, 463,393 service members have been diagnosed with a TBI (Figure 3.1a) (US Department of Defense, 2023).



**Figure 3.1a**

*Traumatic Brain Injury by the Numbers*

**Source**

*U.S. Department of Defense, 2023*

Service members can sustain a TBI during day-to-day activities, such as playing contact sports or participating in recreational events, military training, and military deployment. Military service members and Veterans are also at risk of brain injury from explosions experienced during combat or training exercises.

Most traumatic brain injuries sustained by members of the U.S. Armed Forces are classified as mild TBI, also known as concussion. Most service members who sustain a mild TBI will return to full duty within 10 to 14 days through rest and therapy, known as “progressive return to activity,” in which patients gradually return to regular activity using a standardized, staged approach. Further treatment is available for those whose symptoms persist after the recommended rest period. With the increase of TBIs, special computer-based testing is conducted prior to deployments and the information is used in the assessment and treatment of service members that sustain a TBI. While conducting operations in combat zones, restrictions are placed on mandatory rest periods for and a maximum number of TBI. This helps to prevent long-term damage to service members from repeated TBI. The implementation of the deployment health assessment requirements helps to identify and treat individuals with unreported TBI symptoms.

Veterans who have sustained a TBI may experience co-occurring health conditions, such as post-traumatic stress disorder (PTSD) and depression (Center for Disease Control and Prevention, 2023).

## References

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