

TRAUMATIC BRAIN INJURY IN AGRICULTURE

Makenzie K. Thomas¹, Faye McGuire², Meghan Skidmore³

TRAUMATIC BRAIN INJURY (TBI)

Traumatic brain injury occurs when an external mechanical force causes brain dysfunction (Mayo Foundation for Medical Education and Research, 2021).

TBI most often occurs from a violent blow or jolt to the head or body, such as from a motor vehicle accident or fall—but, it can also occur from an object penetrating the skull (e.g., bullet, nail, and many other objects). TBI is more likely to occur in men than in women, with the highest age risk occurring between 15 and 29 years old.

Levels of Traumatic Brain Injury (Brasure, et al., 2021)

- ▶ Mild: Loss of consciousness for 0 to 29 minutes.
- ▶ Moderate: Loss of consciousness for 30 minutes to 24 hours.
- ▶ Severe: Loss of consciousness greater than 24 hours.

“Mild traumatic brain injury may cause temporary dysfunction of brain cells (Fig. 1). More serious traumatic brain injury can result in bruising, torn tissues, bleeding, and other physical damage to the brain that can result in long-term complications or death (Mayo Foundation for Medical Education and Research, 2021).”

Causes of Traumatic Brain Injury

- ▶ Falls
- ▶ Motor vehicle accidents
- ▶ Explosive blasts/combat injuries
- ▶ Blunt trauma
- ▶ Assault
- ▶ Other

¹ Texas AgrAbility Program Coordinator

² Occupational Therapy Doctoral Student (MGH Institute of Health Professions – Boston, Massachusetts)

³ Doctor of Occupational Therapy (OTD)

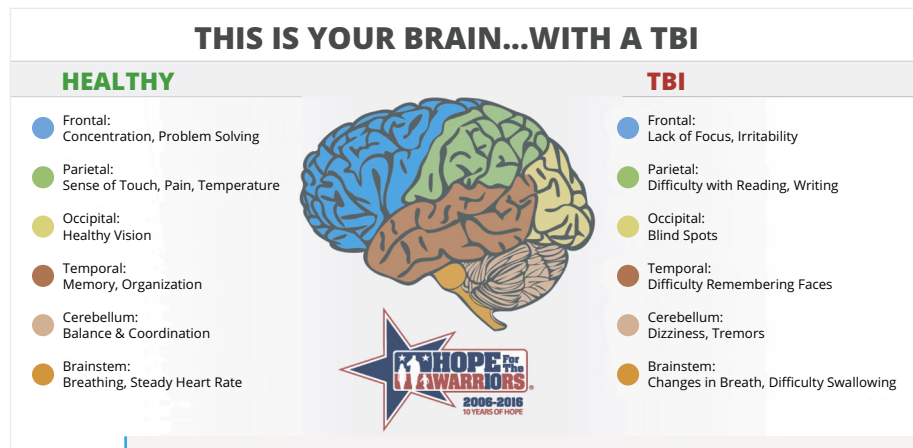


Figure 1. An example of how Traumatic Brain Injury (TBI) affects daily life. (Graphic courtesy of Hope for the Warriors. For more information: www.hopeforthewarriors.org.)

Effects of TBI (Johns Hopkins Medicine, n.d.)

- ▶ **Physical**
 - Limited eyesight/awareness: May be unable to see out of certain parts of the eye or be aware of items in their surroundings.
 - May be unable to use or have difficulty using parts of the body, such as an arm or leg (hemiparesis/hemiplegia).
- ▶ **Cognitive**
 - Limited memory: It may be difficult to learn new tasks.
 - Attention: It may be difficult to concentrate or pay attention for long periods, especially in a busy environment.
 - Poor impulse control.
 - Unable to self-monitor actions, know personal limitations, or anticipate consequences.
 - Issues with speech.
- ▶ **Behavioral and Emotional**
 - May become impulsive, aggressive, or easily frustrated.

TRANSITIONING BACK INTO THE WORKPLACE

Some individuals may continue to experience cognitive or mood difficulties as they transition back into the workplace.

Many individuals with TBI experience difficulties related to attention span, short-term memory, and organization in the workplace. Headaches and mental fatigue may also continue to persist for some.

Work Supports

Many people who have brain injuries successfully return to work after their injury using Work Supports (Brain Injury Association of Oregon, 2011).

“‘Work Supports’ refers to various strategies or modifications incorporated into the workplace that assist a person with a disability to remain successfully employed. Just as no two employees with disabilities are exactly alike, Work Supports are individualized to fit the specific needs of each employee, their job setting, and the required tasks. Depending on the needs of the employee, Work Supports may be incorporated into the daily routine, occur periodically, or be used only during the initial training period (Oregon State Rehabilitation Service, 2011).”

Examples of Work Supports include: scheduled rest breaks, use of timers or visual reminders (such as a checklist), reduced lighting to avoid headaches, visual instructions for machine operation or other farm tasks, adapted seating or hand/foot controls for farm tasks, and much more.

Workplace Safety

An individual with a TBI may experience decreased safety awareness due to impulsiveness, impaired judgement, and/or lack of awareness of their disability (Brain Injury Association of Oregon, 2011).

Lack of insight or deficits in self-awareness may be a significant issue for some people following a brain injury. A person may have little to no awareness about their physical, cognitive, personality, or behavioral changes due to physiological damage to their brain structures.

- ▶ Operating farm equipment safely requires spatial awareness. Heavy rotating parts and moving machinery can be very dangerous. For someone with decreased spatial or self-awareness, increased safety measures may need to be implemented. Bright colored tape for hitching points can visually alert the farmer or rancher (Fig. 2). Many older model tractors do not come with safety measures in place, therefore guards on a power take-off (PTO) or rotating heads may need to be added. The farmer or rancher, family member, and employees should



Figure 2. Equipment safety and spatial awareness sign.

inspect all equipment for safety concerns. For a safety consultation, contact the Texas AgrAbility staff: <https://txagrability.tamu.edu/contact-us/>.

- ▶ Maintain three points of contact with climbing in and out of equipment, grain bins, or up and down ladders. Three points of contact can be two hands and one foot, or two feet and one hand.
- ▶ Non-slip footing can be added to equipment steps, ladders, and stairs to prevent slips, trips, and falls (Fig. 3).



Figure 3. Non-slip footing to prevent slips, trips, and falls when accessing equipment.

Assistive Technology (AT)

Assistive Technology is a device or aide that a person can use to make their lives easier and make them more independent in completing daily tasks. It can be high tech or low tech (e.g., electronic devices, Post-it notes, and more).

- ▶ **Driving:** Hand controls or pedal adaptors for equipment can be added (e.g., truck,

tractor, and other equipment). (Click on the link for examples: <http://www.agrability.org/toolbox/?mode=search&n=5&term=pedals%20&i=1>.)

- ▶ **Memory:** Checklist with daily and weekly chores on it, which can be on paper, whiteboard, phone, or on a computer (Fig. 4).
- ▶ **Safety Awareness:** Bright colored signs or labels to bring attention to an area that may be dangerous, such as a moving PTO shaft (important for individuals who may have difficulty with eyesight, visual awareness, or limited attention).

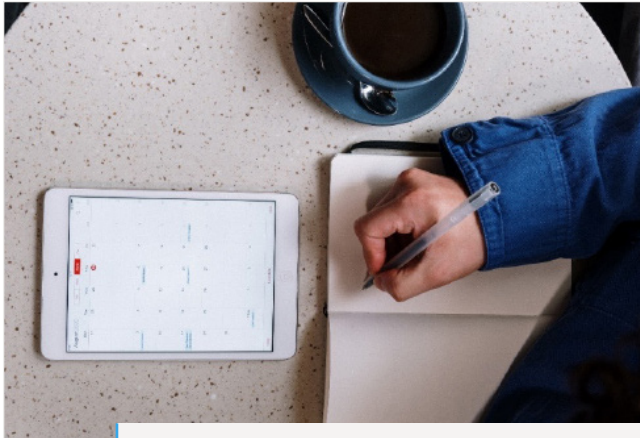


Figure 4. An example of various forms of checklist that can be used to help with memory.

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