

## Let's Talk About...

# Traumatic brain injuries (TBIs): Returning to play

A traumatic brain injury (TBI) is an injury that changes normal brain function temporarily. Mild TBIs are often called concussions.

### How serious is a traumatic brain injury?

Traumatic brain injuries are classified as very mild, mild, complicated mild, moderate, and severe. Healthcare providers use the Glasgow Coma Scale (GCS) to score your child based on their eye, verbal, and motor responses after a traumatic brain injury. A high score (15) means your child has a very mild TBI. A low score (3–8) means your child has a severe TBI.

A healthcare provider also scores your child based on:

- **Loss of consciousness:** Time your child was unconscious after the injury, if any

- **Alteration of consciousness (AOC):** Your child's mental state may have changed temporarily. Signs of AOC include:
  - Looking confused or dazed
  - Confusion about what happened or is happening now
  - Trouble thinking about or responding correctly to questions
- **Post-traumatic amnesia:** Disorientation and forgetfulness after a TBI
- **Radiology:** Detailed images of your child's brain to look at any changes

Note: If your child meets criteria in more than one category, they'll be assigned the higher severity level.

The scores for each TBI classification are explained in the chart, figure 1.



Figure 1

TBI severity	Glasgow Coma Scale (GCS) score	Loss of consciousness (LOC)	Alteration of consciousness (AOC)	Post-traumatic amnesia (PTA)	Radiology (if done)
Very mild	15 (when first examined)	None or less than 1 minute	None (when first examined)	None or less than 1 hour	Normal structural imaging
Mild	13–15	None or less than 30 minutes	None or less than 24 hours	None or less than 24 hours	Normal structural imaging
Complicated mild	13–15	None or less than 30 minutes	None or less than 24 hours	None or less than 24 hours	Abnormal structural imaging
Moderate	9–12	31 minutes to 24 hours	More than 24 hours	1–7 days	Normal or abnormal structural imaging
Severe	3–8	More than 24 hours	More than 24 hours	More than 7 days	Normal or abnormal structural imaging

## How are very mild and mild traumatic brain injuries treated?

If your child has a very mild or mild TBI, they should:

- See their healthcare provider or the concussion clinic to make sure they're safe to begin activities again
- Avoid playing sports until they have resumed a regular school workload
- Return to full activity no faster than 1 week for a very mild TBI or 2 weeks for a mild TBI once they have no symptoms (see figure 2)

## When can my child return to activity after a very mild or mild TBI?

When your child's symptoms are gone, they can gradually return to activity by following the return to activity chart, figure 2. If your child develops symptoms in a rehabilitation stage, they should return to a previously tolerated stage.

Figure 2

Rehabilitation stage	Exercise	Objective
Light aerobic exercise	Walking, swimming, or stationary cycling at 70% of maximum permitted heart rate (no resistance training)	Increase heart rate
Sport-specific exercise	Examples include hockey skating drills or soccer running drills (but no head-impact activities)	Add movement
Non-contact training drills	More complex training drills, like football passing drills, and beginning resistance training	Increase exercise, coordination, and cognitive load
Full-contact practice	Participating in normal training activities ONLY when appropriate healthcare provider says it's OK	Restore confidence and assess functional skills
Return to play	Full game play	

## What activities should my child avoid after a traumatic brain injury?

If your child has a complicated mild, moderate, or severe TBI, they should avoid some sports during their rest period (explained later). Other sports are OK during this time. See figure 3.

Figure 3

Sports to try	Sports to avoid	
<ul style="list-style-type: none"> <li>• Golf</li> <li>• Jogging</li> <li>• Light cross-country skiing or running</li> <li>• Lightweight training</li> <li>• Mild recess activities with two feet on the ground</li> <li>• Non-contact gym activities</li> <li>• Riding roller coasters</li> <li>• Road biking under direct supervision</li> <li>• Tennis</li> <li>• Track</li> </ul>	<ul style="list-style-type: none"> <li>• Baseball</li> <li>• Basketball</li> <li>• Boxing</li> <li>• Contact gym activities (like dodgeball)</li> <li>• Field hockey</li> <li>• Football</li> <li>• Gymnastics</li> <li>• Hockey</li> <li>• Jumping on the trampoline</li> <li>• Lacrosse</li> </ul>	<ul style="list-style-type: none"> <li>• Motocross, mountain biking, or BMX biking</li> <li>• Motorized water sports</li> <li>• Riding or driving ATVs</li> <li>• Rugby</li> <li>• Skiing</li> <li>• Snowboarding</li> <li>• Soccer</li> <li>• Volleyball</li> <li>• Wrestling</li> </ul>

## How is a complicated mild traumatic brain injury treated?

If your child has a complicated mild TBI, it means the healthcare provider saw bruising or blood in your child's brain during imaging. This can cause:

- **Subarachnoid hemorrhage (SAH):** Bleeding in the space between the brain and surrounding membrane
- **Subdural hematoma (SDH):** Blood between the brain and the dura (outermost covering)
- **Epidural hematoma (EDH):** Blood between the skull and the dura
- **Linear non-depressed skull fracture**
- **Complex non-depressed skull fracture**
- **Parenchymal contusions:** Bruises in the brain
- **Shear injury:** Tears to the brain's connecting nerve fibers when the brain shifts in the skull

Figure 4 explains when your child can return to activity, depending on other brain problems. Once their healthcare provider says they're safe to begin activities again, their symptoms are gone and they can handle a regular school workload, they should follow this and the return to play chart. Your child should also avoid the sports in figure 3 during their rest period and until they've resumed a regular school workload.

Figure 4

Brain problem	Time to return to activity
Small subarachnoid hemorrhage (SAH)	2-3 months
Large SAH	At least 3 months
Subdural hematoma (SDH)	3 months
Linear non-depressed skull fracture	2 months
Complex non-depressed skull fracture	2-3 months
Linear non-depressed skull fracture with small epidural hematoma (EDH)	2 months
Linear non-depressed skull fracture with bigger, non-operative EDH	3 months
Parenchymal contusions	2-3 months, depending on size
Shear injury	3 months

