# 🧠 UNDERSTANDING CONCUSSIONS

**What happens in the brain, how does it heal, and can we retrain it?**

*A simple guide to understanding concussion and recovery.*

## 💙 1. What happens in the brain during a concussion?

A concussion is a mild traumatic brain injury (mTBI) that affects how the brain functions.

A blow to the head or body can cause the brain to move rapidly inside the skull, resulting in:

- **Chemical changes:** Disruption in normal communication between brain cells.
- **Energy disruption:** The brain temporarily needs more energy to restore balance.
- **Functional changes:** Memory, concentration, balance, vision, sleep, and mood may be affected.

**Remember:** A concussion does not always cause visible damage on a CT scan or MRI. It often affects how the brain functions rather than its visible structure.

## 💚 2. How does the brain recover?

The brain gradually restores its chemical balance, energy use, and communication between cells.

Recovery may involve improved concentration, memory, balance, coordination, sleep, and tolerance for physical and mental activity.

A gradual return to everyday activities and appropriately guided exercise can support recovery. Prolonged complete rest is generally not recommended.

## 💜 3. Why do some people recover in weeks while others experience symptoms for months or years?

Recovery is different for everyone. Factors that may contribute to prolonged symptoms include:

- Previous concussions or migraine history.
- Sleep difficulties and fatigue.
- Stress, anxiety, or depression.
- Neck injuries, vision, or balance difficulties.
- Individual differences and access to rehabilitation.

Persistent symptoms often involve several contributing factors and do not necessarily mean permanent brain damage.

## 💙 4. Can symptoms last a year or longer even when CT scans or MRIs are normal?

**YES!** Some people experience symptoms a year or more after their injury.

Normal scans do not mean the concussion did not happen or that symptoms are not real. Standard imaging may not detect subtle changes in brain chemistry, energy use, or communication.

Ongoing symptoms may include headaches, brain fog, memory difficulties, dizziness, fatigue, sleep problems, and sensitivity to light and noise.

Many symptoms can be addressed through appropriate assessment and treatment.

## 💖 5. What is neuroplasticity? Can we retrain the brain?

**Neuroplasticity is the brain's ability to adapt, reorganize, and strengthen connections between brain cells.**

Think of it as building new pathways when existing ones are not working as efficiently.

Rehabilitation may include:

- **Cognitive therapy:** Memory, attention, and concentration.
- **Vestibular therapy:** Balance and dizziness.
- **Vision therapy:** Certain visual difficulties.
- **Graded exercise:** Gradually rebuilding physical tolerance.
- **Sleep and stress management:** Supporting overall recovery.

**The encouraging message:** Improvement can still be possible months or even years after a concussion.

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## 🌟 THE BIG TAKEAWAYS

- A concussion is a real brain injury, even when scans are normal.
- Everyone's recovery journey is different.
- Persistent symptoms should be taken seriously.
- The brain can adapt through neuroplasticity.
- Appropriate rehabilitation can support improvement long after the initial injury.

## 📚 LEARN MORE

1. **BC Concussion Guidelines:** https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/concussion-mbti-full-guideline.pdf
2. **Living Concussion Guidelines:** https://concussionsontario.org/
3. **CDC – Concussion Information:** https://www.cdc.gov/traumatic-brain-injury/about/index.html

*Educational resource only. Persistent or worsening symptoms should be assessed by a healthcare professional.*