



**TACKLE**  
— SMART —

# CONCUSSIONS

## THE SCIENCE BEHIND CONCUSSIONS

*What are the short term &  
long term effects?*

*How to: Identify, Treat & Prevent*

## BUSTING MYTHS

# THE SCIENCE BEHIND A CONCUSSION

## WHAT IS A CONCUSSION?

A concussion is a type of traumatic brain injury resulting from a blow, hit, bump, or jolt to the head that causes the brain to quickly move back and forth.

This fast movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging the brain cells.<sup>\*1</sup>

### DID YOU KNOW?

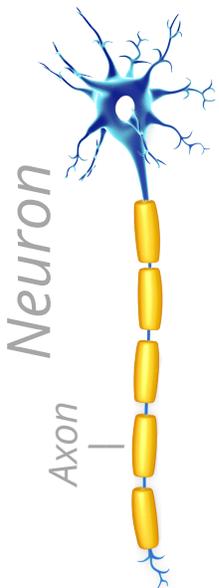
Each year in the United States, players of sports and recreational activities receive between 2.5 and 4 million concussions.<sup>\*2</sup>

While the brain is a "mushy mass," it is not quite solidified. It's actually made of an EXTENSIVE network of 90 billion **neurons** (these neurons are the reason our brain is able to communicate & control our body, like telling when/how to move).

**Neurons'** spindly structures (see image to the left) are indeed fragile which means, during an injury, they can stretch which can cause them to tear. When breakage does happen, as the **axons** (they carry the signal) begin to degenerate, they begin to release toxins as well.

So since these neurons, which are the communication links from our brain to the rest of our body are now fractured combined with toxins being released, a concussion occurs

So with this damage, comes our body's reaction. Since every brain is different, so is everyone's reaction to the concussion. **However, in most cases, people who have a concussion will fully heal & symptoms can disappear a few days, weeks, or months.**



## SYMPTOMS <sup>\*3</sup>

*Mild Concussion: Generally lasts 7-10 days*

*Post-Concussion Syndrome: Symptoms that last weeks or months*

### Physical

Headache

Neck Pain

Lightheadedness

Dizziness

Sensitivity to light

Sensitivity to noise

### Mood/Behavioral

Irritability

Anxiety

Depression

### Cognitive

Memory

Attention

Focus

Executive Function

### Sleep

Sleeping too much

Trouble falling asleep

## LONG TERM EFFECTS

### What is CTE?

**Chronic traumatic encephalopathy (CTE)** is a progressive and fatal brain disease associated with repeated traumatic brain injuries (TBIs), including concussions and repeated blows to the head.

- Repeated head impacts over time (not necessarily even large concussions)<sup>\*4</sup>

### What can it lead to?

- Memory and thinking problems
- Confusion
- Personality Changes
- and/or erratic behavior including aggression, depression, and even suicidal thinking.

Other symptoms may include problems paying attention and organizing thoughts as well as difficulty with balance and motor skills.

- People may not experience these potential signs of CTE until years or decades after brain injuries occur.



# WHAT TO DO IF YOU THINK YOU HAVE A CONCUSSION

*How you respond to a suspected concussion will be important during your recovery!*

The Concussion Legacy Foundation recommends you take the following steps: <sup>\*3</sup>

- 1 Do NOT continue the activity that caused or could cause more stress, trauma, pain to your brain.
- 2 If you have any signs or symptoms of a concussion, make sure you get evaluated by an appropriate medical profession  
*\*signs & symptoms can appear days after\**
- 3 REST: Your body & brain need time to recover! Avoid any activities that make you feel worse.
- 4 Take notes of your symptoms: Have they remained constant? If/When do your symptoms get worse?
- 5 MINDSET: In most cases, people recover from their concussion in a few weeks so don't let it keep you down!



# HOW TO PREVENT A CONCUSSION

## NECK STRENGTHENING

Neck strengthening exercises are one of the most effective ways to prevent concussions in contact sports.

These exercises, which should be incorporated for athletes of all ages and ability levels, can help to decrease the impact that contact has on the brain.

***Recent research shows that neck strength, size, and posture can decrease both the risk and severity of concussions.***

This is because a stronger, thicker neck that is aligned forward will result in less impact being applied to the brain during contact.

*Basically, a stronger neck decreases the amount of force that the brain feels upon impact.*

## EDUCATION AND AWARENESS <sup>\*5</sup>

**Baseline Concussion Testing** is a pre-season exam that assesses an athlete's balance and brain function. This includes learning and memory skills, the ability to pay attention or concentrate, how quickly he or she thinks and solve problems, as well as for the presence of any concussion symptoms.

### Limit Exposure to Full Contact

- Reduce the amount of time or number of sessions where you do full contact, and instead focus on technique
- Give thought to not introducing your child to tackle football until they are more physically developed, confident, and technically more correct.

## TACKLE TECHNIQUE

The majority of concussions that happen in football occur in the tackle situation and specifically by the tackler. Traditionally players were taught to lead with their heads which have caused major concussions.

***What does rugby-style tackling look like though?*** Like we said above, it's about removing your head from the tackle, therefore better protecting your brain.

# BUSTING MYTHS

**MYTH** : I CAN ONLY GET A CONCUSSION FROM A DIRECT HIT TO MY HEAD!

**FACT**: A CONCUSSION RESULTS FROM THE "RATTLING" OF YOUR BRAIN INSIDE YOUR SKULL.

**MYTH** : A CONCUSSION IS ONLY SERIOUS IF I LOSE CONSCIOUSNESS

**FACT**: MOST PEOPLE WHO RECEIVE A CONCUSSION DON'T ACTUALLY PASS OUT.

Since no two brain injuries are the same, some signs & symptoms may appear faster/later than others.

To avoid life-threatening consequences from not being evaluated when needed, treat every head injury with concern & urgency.

**MYTH** : I AM NOT ALLOWED TO TAKE/GIVE PAIN MEDICATION AFTER A CONCUSSION.

**FACT**: OVER-THE-COUNTER <sup>\*4</sup> ACETAMINOPHEN (TYLENOL) CAN BE RECOMMENDED TO HELP REDUCE PAIN

but it should not be given until four hours after the concussion due to the rare possibility of a brain bleed.

Other OTC meds like Advil or Aleve may thin blood so they are not recommended within the first 12 hours of a concussion.

## CONTACT US

Email: [roger@tacklesmartsports.com](mailto:roger@tacklesmartsports.com)

Telephone: 972-805-6493

