Concussion FAQ

Concussion And The Brain

What is a concussion?

A concussion is a type of traumatic brain injury—or TBI—caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging brain cells.

Source: CDC

What happens to the brain when you get a concussion?

The brain does not absorb the brunt of the impact. Instead, it's the protective liquid barrier between your brain and skull. As a result, the liquid sloshes back and forth, carrying your brain with it. This can bruise the brain tissue at the sites of impact.

But something more sinister is happening deep in the tissue. The brain's motion is stretching and ripping the axons apart. Axons are delicate fibers that carry electrical signals throughout the brain. Without these signals, one can't control his/her body.

When axons break apart, they die and release harmful toxins. These toxins will damage healthy nerves in the brain. One may experience this nerve damage as one, or more, of the following: a headache, dizziness, fatigue, blurry vision, unconsciousness. Plus, the damage caused by the first concussion actually raises one’s risk of a second one within the following year.

Source: Business Insider

Why do you not have good balance following a concussion?

Problems with eyesight (vision impairments): Eyesight is one of the key senses you need to keep your balance. Eyesight problems such as double vision, visual instability, partial loss of vision, and problems with depth perception can make your balance worse.

Inner ear problems (vestibular impairments): Your inner ear contains many tiny organs that help you keep your balance (called the vestibular system/labyrinth). Your inner ear has three loop-shaped structures (semicircular canals) that contain fluid and have fine, hair-like sensors that monitor the rotation of your head. It also has other structures (otolith organs) that monitor linear movements of your head. These otolith organs contain crystals that make you sensitive to

movement and gravity. If your vestibular system is damaged from your head injury, you may have problems with balance and dizziness.

Problems with your ability to sense things (sensory impairments): For example, nerves in your feet send messages to your brain that help you keep your balance. If these nerves are damaged by your brain injury, your brain may not get the messages it needs. The brain may need to rely more on your eyesight and inner ear to keep your balance.

Source: University of Washington

Why do you have light sensitivity when you have a concussion?

Acute TBI causes displacement, irritation, or injury of pain-sensitive intracranial structures, which likely accounts for both a headache and photophobia associated with brain injury

Though most patients with mild head injury are improved after 6 months, those with post-concussive syndrome retain an increased sensitivity to light

Source: Shedding Light on Photophobia

Why does your near-point (eyes) change when you have a concussion?

Mild, moderate and severe concussions cause closed head injuries (aka traumatic brain injuries) (TBI). A concussion of any severity may cause visual dysfunction. These visual symptoms may be dramatic and obvious –think blindness and double vision or much more subtle like difficulty focusing at near objects-print or computer screens.

Accommodative-convergence insufficiency is the most common visual squeal of a concussion. It is also commonly overlooked or ignored. These patients complain of decreased vision especially at near.

After a concussion, we lose this ability because the portion of the brainstem that controls focusing of the lens is injured by the trauma.

Source: Sarasota Retina Institute

Why is your reaction time slower when you have a concussion?

Head injury does result in deficits in attention and speed of information processing. Our results suggest that the deficits can be divided into several factors. There is overall a generalized slowing in visuomotor responsiveness, which frequently does not reach the level of significant difference. There is a divided attention deficit. In addition, however, traumatic brain injury may result in impairment in focused attention and consistency of performance.
Source: Reaction time after head injury: fatigue, divided and focused attention, and consistency of performance

What should you expect from a recovery time perspective for a concussion?

The study of more than 300 concussion patients, which was published online Jan. 6 in the journal Pediatrics, showed that only those who reported the most mental activity took the longest time to fully recover -- an average of 100 days.

The researchers used a concussion-symptom scale and found that patients who engaged in the most mental activity took about 100 days to completely recover, having no headaches, dizziness or blurred vision.

For those who gave their brains time to heal, recovery time was cut to an average of 43 days, the study found.

Source: WebMD

What do Omega-3 pills have that help the Brain?

The omega-3 fatty acids EPA and DHA are very helpful for reducing inflammation from a concussion.
Source: Integrative Practitioner

The omega-3 fatty acids EPA and DHA are critical for normal brain function and development throughout all stages of life.

These two fatty acids are components of cell membranes and have powerful anti-inflammatory functions within the body. They are also well known for their critical roles in human development and heart health.

Fish oil also has an incredible impact on the brain, especially when it comes to mild memory loss and depression.

Source: Healthline

Why does DHA help the Brain?

DHA is essential for maintaining membrane fluidity, thereby affecting the speed of neuronal transmission.
Source: Brain Food Brain Food

Long-chain polyunsaturated fatty acid (LC-PUFA), including docosahexaenoic acid (DHA), is incorporated into membrane phospholipids and, apart from their structural role in these membranes, they also act as precursors of autacoid signaling molecules (e.g., docosanoids) and as potent activators of a number of gene transcription factors.

Docosahexaenoic acid (DHA) is essential for the growth and functional development of the brain in infants. DHA is also required for maintenance of normal brain function in adults. The inclusion of plentiful DHA in the diet improves learning ability, whereas deficiencies of DHA are associated with deficits in learning.

Source: DHA Effects In Brain Development And Function

What studies prove that you should have DHA when you have a concussion?

“There is a growing body of preclinical literature suggesting that ω-3 FAs, and DHA in particular, may play a therapeutic role in mTBI. At present, this is an emerging avenue for LCPUFA research, offering the potential for ameliorating or possibly even preventing the complications associated with concussions.”

Study: ω-3 Fatty Acid Supplementation as a Potential Therapeutic Aid for the Recovery from Mild Traumatic Brain Injury/Concussion

“Research suggests that early and optimal doses of omega-3 fatty acids (n-3FA) have the potential to improve outcomes from traumatic brain injury.“
Study: Concussions, Traumatic Brain Injury, and the Innovative Use of Omega-3s. Journal of the American College of Nutrition

What does Magnesium Glycinate do for you (for sleep)?

Dr. Neil Kline of the American Sleep Association said there is “very little evidence” that magnesium can be used as a sleep aid, and that it is, therefore “hard to recommend” as beneficial for sleep. However, Dr. Raj Dasgupta, a spokesperson for the American Academy of Sleep Medicine, noted that it could make us feel relaxed at bedtime, which might lead to better sleep.

Magnesium, Dasgupta explained, can help relax our muscles — “Insomnia, getting good sleep, many of us believe that muscle relaxation is essential for that”— while also helping ease our anxiety (which contributes to insomnia). That’s because magnesium actually binds to a special neurotransmitter in our bodies called GABA, which is also a receptor for sleeping aids like Ambien. “When we supplement with magnesium, it also binds to that receptor and has anti-anxiety effects,” he said.

Source: The Cut

What does curcumin do for you when you have a concussion?

Curcumin (the active ingredient in the spice turmeric) is an extremely valuable supplement for treating a concussion. After a traumatic brain injury, curcumin supplements can help reduce cognitive impairment, help stabilize energy use in the brain and reduce membrane damage in the neurons.

This supplement is so helpful due to its multiple anti-inflammatory mechanisms for a damaged brain that I recommend it to all my concussion patients.

Source: Integrative Practitioner

Whiplash

What happens to the neck when you get a whiplash?

Whiplash results when the soft tissues (the muscles and ligaments) of your neck extend beyond their typical range of motion.

The muscles in your neck suffer a strain because of a rapid movement backward and then forward. The sudden motion causes your neck's tendons and ligaments to stretch and tear, resulting in whiplash.

Source: Healthline

What are exercises for a whiplash?

The best PDF I've seen to date is this one: Oxford Radcliffe Hospitals

- Chin-Tuck. Chin-tucks gently stretch the muscles along your neck and upper back.
- Flexion. Flexion is bending your neck forward.
- Side-Bending. Side bending exercises improve your ability to tip your ears toward your shoulders.
- Extension. Neck extension allows you to look up at the ceiling. Maintain good posture during this exercise to avoid pinching nerves in the back of your neck.
- Rotation. Rotation exercises allow you to look over your shoulders.
- Isometrics. Isometric exercises strengthen your neck and upper back muscles without allowing any movement. As with the range of motion exercises, maintain good posture throughout these movements.

Source: Livestrong

How does posture help with whiplash?

The posture of the head and neck is equally important for a patient recovering from whiplash injury. Forward head carriage describes a set in which the head sits more forward on the shoulders than it should.

In order for the muscles in the neck and shoulders to keep the head upright, they must work harder. This added strain can increase one's risk for neck pain and headaches, which is why retraining posture is a key component to the management of neck pain and headaches in patients with or without a history of whiplash.

Source: Chiro-Trust

Concussion statistics

Are rates of concussions increasing or decreasing?

Between 1.7 and 3 million sports- and recreation-related concussions happen each year. Around 300,000 are football-related.

Source: UPMC

According to data of individual studies prepared by the University of Wisconsin-Madison, and Dr. R. Dawn Comstock, director of the National High School Sports-Related Injury Surveillance System and associate professor of epidemiology at Colorado Children's Hospital, there is a notable decline in sports-related concussion rates during football practice. Although the overall rate and number of competition-related concussions increased during the 2015-16 season, Comstock found that the rate of concussions during practice dropped below 5.0 per 1,000 athletic exposures to 4.77 for the first time since 2010-11, when it was 3.11.

Source: https://www.nfhs.org/articles/studies-show-decline-in-rate-of-concussions/

What percentage of concussions are not sports related?

According to Tony Doran, Psy.D., HeadFirst Concussion Care Program Director, 60 to 70% of concussion patients from HeadFirst Concussion clinics are not sports related.

Source: My Head First

Are concussions more prevalent in men or women? What are the percentages?

The statistic shows the rate of concussion in the U.S. from 2010 to 2015, by gender (per 1,000 Blue Cross Blue Shield (BCBS) members. In 2015, the rate of concussion among males was 4.5 per 1,000 BCBS members, whereas it was 4 among females.
Source: Statista

In what countries do we see more concussions?

There are only a few statistical reports on concussions in different countries are existing. That is why there is a need to conduct further studies on this. However, it is notable that United States, Australia, Europe and Canada are putting importance on the prevalence of concussion.

Sources:

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