

NUTRITIONAL SELF DEFENSE™

Immediate Concussion Care: Top 8 Supplements



Dr. Craig Rubenstein

It has been nearly two years since I wrote my first article about the nutritional treatment of concussions. In that time I still haven't heard one mention in the mainstream media about any type of treatment for concussions, only talk of prevention and diagnosis. Please, don't get me wrong, I think prevention is the best medicine, and determining if someone has actually sustained a concussion is of utmost importance. Unfortunately, people will continue to get concussions and nutritional and other treatment protocols that are already being used successfully need to be brought to light in the mainstream media. As mentioned in my first article, a large amount of the research relating to my recommendations is from animal studies with the rest from human research and individual patient experiences. This article will discuss the prevalence of head injuries, the immediate and subsequent damage occurring in concussion and more severe traumatic brain injuries, and my top 8 nutritional supplements to start using as soon as possible.

What is a concussion? Not too long ago, you were considered to have a concussion only if you lost consciousness from a head injury. In fact, not only do you not have to lose consciousness (research suggests only 10% of people do), but you don't even have to hit your head. Many of the concussions in military personnel have occurred from the force of an explosion, not from a direct blow to the head. We also know that many concussions happen during whiplash injuries, like a car accident or in an infant that is violently shaken.

Concussions are the most common type of

traumatic brain injury and are often referred to as mTBI. The World



Health Organization (WHO) estimates that there are upwards of 50-60 million head injuries per year worldwide. Concussions or mild TBI's (mTBI's) make up 75-80% of head injuries. Concussions cause a variety of physical, mental, cognitive, and emotional symptoms, which may not be recognized if subtle. People who have had one concussion are more prone to another, often with less severe trauma. This is especially true if the new injury occurs before the previous concussion has resolved. Multiple concussions may increase the risk for dementia, Parkinson's disease, and/or depression later in life, and are associated with chronic traumatic encephalopathy or CTE (currently CTE can only be diagnosed after death by autopsy). CTE has been the big news for a few years in the NFL. CTE is basically serious brain damage

and explains the massive mental problems many athletes have after years of head traumas in their chosen careers

Head injuries have a primary and secondary component. The primary component is the immediate damage the brain sustains from the trauma. This includes bruising of the brain and some possible bleeding, shearing and tearing of nerves, other brain cells and blood vessels. A substantial amount of nerve cell death begins within hours of the primary injury. The secondary injury component starts within minutes of the trauma and may go on for years. This secondary component involves chemical reactions and abnormal brain cell functioning and this is where the nutritional approach works.

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The most common symptoms are as follows:

- Nausea
- Fatigue
- Dizziness
- Headaches
- Blurred vision
- Sleep disturbed or excessive
- Coordination and balance issues
- Poor concentration and inattention
- Memory impairment/ feeling like in a fog/confusion
- Slower thought processing speed and/or delayed reaction time
- Impairment of mental performance, organization ability and decision making
- Depression/anxiety/irritability/easily frustrated/agitation/poor stress tolerance

PTSD may occur as well as seizures in more severe cases

It is my opinion based on all the available research that there is always some degree of brain damage in all TBI cases, even if the patient appears “OK”.

What is actually happening in the brain during this prolonged secondary component of TBI? There is damage to the actual nerve cells, particularly the membrane of the cells. A damaged membrane causes the mineral ions of calcium, sodium and potassium to become imbalanced inside and outside the cells causing the cells to swell leading to brain dysfunction and even more nerve cell death. Since 40% of the energy the brain uses is to maintain the balance of these mineral ions a major energy crisis begins as the brain struggles to maintain balance.

The brain also starts having trouble using glucose or blood sugar as an energy source causing an even greater energy crisis. Other than the building energy crisis, the four major problems in the brain are: **Excitotoxicity, Oxidative stress, Mitochondrial dysfunction and Inflammation**

Excitotoxicity: Caused by high amounts of a brain toxic chemical called glutamate being released from damaged brain cells. This further damages the cell covering or membrane, the mitochondria or energy generator in the cell and the cell's DNA.

Oxidative stress: Also called free radical damage is what I call internal rusting. It is a similar process to what causes metal to rust. Free radicals are destructive

compounds that damages cell proteins, enzymes, DNA and cell membranes even more. Free radicals can be thought of as the opposite of anti-oxidants.

Mitochondrial dysfunction: Mitochondria are the energy producing parts of the cells that are damaged by the above processes leading to even more of an energy crisis in the brain because now the mitochondria's ability to use blood sugar is disrupted. Without a constant supply of energy the brain cannot function properly.

Inflammation: Caused by inflammatory chemicals released by the damaged cells and by over activated immune cells in the brain called microglia. This results in further cell damage and disruption of the blood brain barrier (a barrier that is very selective about what it allows to pass into the brain). The over activation of the microglia has been shown to last for decades...., yes, decades after an initial head trauma causing a constant low level inflammation in the brain.

One way to understand this situation is to liken it to a smoldering fire that may persist for years until it is extinguished by neutralizing the ongoing excitotoxic, inflammatory, and oxidative processes as well as the massive energy crisis. The sooner it is extinguished the less long term damage will occur.

A successful nutritional program for concussion must address all of these processes at the same time! Energy crisis, Excitotoxicity, Oxidative stress, Mitochondrial dysfunction and Inflammation

Here are my top 8 choices to start immediately after getting a concussion

1. DHA is an omega 3 fatty acid. Typically found in fish oil with EPA. Often used with EPA for their anti-inflammation qualities. DHA also helps brain cells regenerate to some degree.
2. Magnesium is one of the most deficient minerals in the average person's diet and is important in myriad chemical reaction in every cell of the body including the brain.
3. Creatine is a compound made up of three amino acids found in large amounts in muscle tissue, traditionally used by body builders to increase muscle mass, but it is also found in high levels in the brain involved in energy production.
4. Coconut oil is a good source of medium chain triglycerides/ketones and can be used as an alternative energy source by the brain.

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5. Oxaloacetate is a compound involved in the Krebs Cycle, which if you remember from biology class, relates to energy production. It is also involved in amino acid and fatty acid production and reduces toxic glutamate.
6. Alpha Lipoic Acid is a potent antioxidant that also recycles vitamin E and Vitamin C while increasing levels of another major intracellular antioxidant called glutathione. Alpha Lipoic Acid is also a critical factor in the mitochondria's ability to make energy.
7. Lipothiamine is a special form of thiamine or Vitamin B1. It is a fat soluble form of B1 and therefore can enter cells without any energy being expended by the cell. This is incredibly important because of the major energy crisis occurring in the brain of the TBI patient, regular water soluble thiamine (B1) typically needs energy to cross the blood brain barrier and enter cells, but fat soluble lipothiamine does not.
8. Curcumin is found in the Indian spice turmeric used in curry and has been shown to have numerous mechanisms that protect and help the brain heal from injury. Curcumin acts not only as an anti-oxidant in the brain but also as an anti-inflammatory. The form of curcumin is very important; it needs to be the BCM-95® form or a nanoparticle form for optimal absorption and results.

The below chart shows that these supplements address all the major dysfunctions occurring in the secondary component in traumatic brain injury and this is why they are my top 8 choices for an acute concussion.

I will leave you with one more thought from a study by De Beaumont in 2009, individuals who had a sports concussion 30 years prior to testing and appeared normal had neurological deficits with memory decline, cognitive abnormalities, and reduced motor functions.

If you get a concussion, treat it!!!

The info in this article isn't meant to diagnose, treat or cure any condition. Always consult with your own health care professional. Dr. Craig Rubenstein was a team Chiropractor to the US Freestyle Ski Team in 1990. He is a certified clinical nutritionist and a Fellow and Diplomate of the International Academy of Clinical Acupuncture. His Park Avenue practice is in NY and he has a satellite office in Suffolk County, Long Island. www.dr rubenstein.com 212-213-9494 You can see his concussion blog at <https://concussionhelpline.wordpress.com>

<u>Supplement</u>	<u>Energy Crisis</u>	<u>Excitotoxicity</u>	<u>Oxidative Stress</u>	<u>Mitochondrial Dysfunction</u>	<u>Inflammation</u>
DHA	√	√	√		√
Magnesium	√	√	√	√	√
Creatine	√	√	√	√	
Coconut Oil	√		√	√	√
Oxaloacetate	√	√	√		
Alpha Lipoic	√		√	√	√
Lipothiamine	√	√	√	√	√
Curcumin	√	√	√		√

Supplement	Day 1-7	Day 7-14	Day 14-Till Resolution
DHA	3000 mg's 3x's/day	3000 mg's 3x's/day	1000 mg's 3x's/day
Magnesium	1000 mg's 3x's/day	1000 mg's 3x's/day	500 mg's 3x's/day
Creatine	5 grams 3x's/day	5 grams 2x's/day	5 grams 1x/day
Coconut Oil	1 Tblspn 3x's/day	1 Tblspn 2x's/day	1 Teaspn 3x's/day
Oxaloacetate	600 mg's 3x's/day	300 mg's 3x's/day	200 mg's 2x's/day
Alpha Lipoic	300 mg's 3x's/day	300 mg's 3x's/day	300 mg's 2x's/day
Lipothiamine	50 mg's 3x's/day	50 mg's 3x's/day	50 mg's 2x's/day
Curcumin	500 mg's 3x's/day	500 mg's 3x's/day	500 mg's 3x's/day