



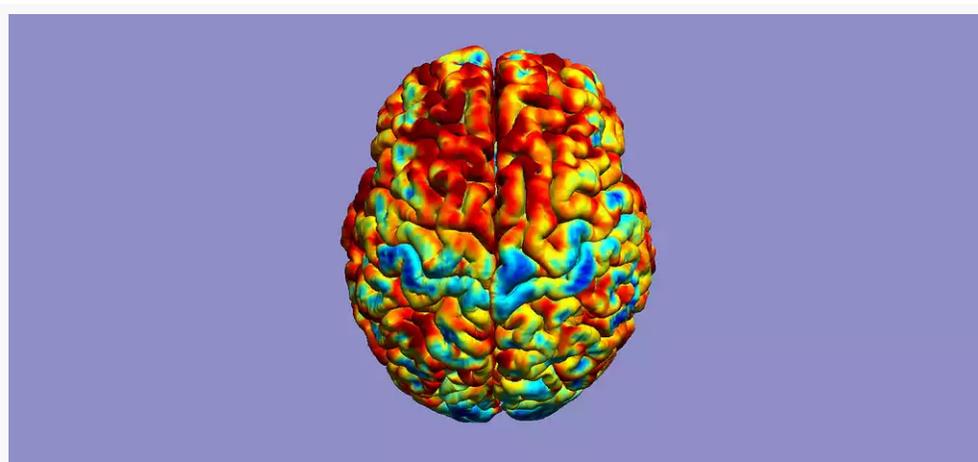
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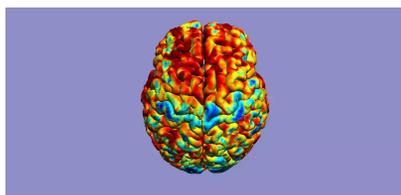
Why Women Are at Increased Risk for Concussions

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The topic of concussions has taken center stage of late, most prominently with the release of the movie “Concussion” in December 2015. **Concussion** is derived from the Latin *concutere* (“to shake violently”) or *concussus* (“action of striking together”). Even with the heavy coverage of the college and pro-athlete concussion rates, there’s one group of athletes not getting much attention – women.

Data reveals that women suffer from a higher rate of concussions and tend to fare worse when it comes to long term effects. In fact, women playing high school sports experience concussions at twice the rate of their male counterparts.

Why women are more susceptible to concussion than men

- Anatomically, women’s neck muscles are less developed than those of men. The head is also usually lighter and smaller in women than in men. These factors often lead to a harsher whip-like action.
- Menstrual cycles may impact the severity of symptoms in female athletes with concussions. Women injured during the premenstrual stage (when progesterone levels are naturally high) experienced slower recovery and poorer health one month after injury as compared to women injured during the two weeks directly after their period. There is an abrupt drop in progesterone after an injury that may lead to worsening post concussive symptoms like headache, nausea, dizziness and trouble concentrating.
- Female athletes are more likely to self-report symptoms.

Furthermore, women have a tougher recovery from concussions. An MRI study suggests that working memory doesn’t bounce back as quickly in women as it does in men. In addition to suffering with more concussion symptomatology, females have a higher rate of concussion compared to males when playing the following sports:



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- Soccer (2.1 times greater risk)
- Softball vs. baseball (up to 3.2 times greater risk)
- Basketball (up to 1.7 times greater risk)
- Women's hockey (twice the rate of men)

Remedies

Fortunately, the healing process can be benefited by the use of a nutritional regimen. The first priority nutritionally is to help heal the current injury; in this case, the part of the brain injured by the concussion. Speeding the healing process reduces the intensity and duration of pain, thereby lessening the amount of substance P released within the thalamus of the brain. Substance P acts as a neurotransmitter and plays a key role in the regulation of inflammation. Lowering the level of substance P decreases the activation of the brain's immune cells, which are the source of inflammatory cytokines.

Reviewed studies reveal that speedy intake of the following macro- and micronutrients should be common practice "almost immediately." These nutrients should be taken right after a concussion and for two weeks following.

Nutritional Support Immediately After Injury

Protein: Helps heal the injury. Take 1g/kg of body weight, starting within a day of the injury.

Creatine: Helps give the brain an intense and immediate hit of energy needed to help cells heal right after an injury.

Reduce inflammatory damage to the brain by consuming: a) DHA: an omega-3 fish oil which is an essential brain lipid, critical for maximal brain health and protection; b) grape seed extract, bromelain, quercetin, ginger; and c) polyphenols – turmeric, resveratrol.

Antioxidants: Alpha-lipoic acid protects both the fatty and water-soluble part of the cells.

Choline: Critical for brain development.

Vitamin D: Has many known benefits, but is now considered neuroprotective as well.

Zinc: A mineral for central nervous system (CNS) health, including the brain.

Magnesium: One of the best weapons against delayed brain injury, magnesium is a vital mineral that plays a role in a number of biological processes. It is involved in more than 300 metabolic reactions, reduces inflammation, and elevates glutathione (a major antioxidant) in cells. Low levels of magnesium in the brain have been shown to greatly increase the vulnerability of the brain to injury.

A Game-Changing Nutrient

As published in Sports Illustrated on April 17, 2014, studies have shown that administering glutathione after a concussion reduces brain-tissue damage by an average of 70 percent. To nutritionally support the glutathione pathway, additional nutrients are required: vitamin C, selenium, niacinamide, N-acetyl-L-cysteine and broccoli extract.

Other Considerations

If symptoms persist beyond a reasonable amount of healing time, then it is likely the thalamus of the brain is struggling. This means the ratio of substance P to Brain Derived Neurotrophic Factor (BDNF) is excessive. To decrease substance P, continue using DHA, bromelain, quercetin, ginger, vitamin D, alpha-lipoic acid and magnesium, which aids brain function. To build up BDNF, use zinc, turmeric and resveratrol, as well as L-carnitine. Using these nutritional supplements after a concussion will enhance the healing process.

Robert Silverman graduated Magna cum Laude from the University of Bridgeport College of Chiropractic and has a Masters of Science in human nutrition. His extensive list of educational accomplishments includes his designations as a certified nutrition specialist, certified clinical nutritionist, certified strength and conditioning specialist, certified Kinesio® taping practitioner, NASM-certified corrective exercise specialist, and a certified sports nutritionist from The International Society of Sports Nutrition. Dr. Silverman is a diplomate with the American Clinical Board of Nutrition and diplomate with the Chiropractic Board of Clinical Nutrition. He has a full-time successful private practice in White Plains, NY, where he specializes in the treatment of joint pain with innovative, science-based, non-surgical approaches.

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