



# Concussion In Sports

## WHAT YOU NEED TO KNOW



### Concussion Physiology

A concussion is a complex physiological process induced by a bump, blow, or jolt to the head or body, transmitting a force that causes the brain to literally bounce around or twist within the skull. The damage done to the brain is at a microscopic level: cells and cell membranes are stretched and torn. This damage leads to an abnormal movement of calcium, potassium, glutamate, and other substances in and out of the injured cells. These changes disrupt the normal function of the cells in the injured part of the brain.

At the same time that these chemical changes are happening, the brain restricts blood flow to the damaged areas. Blood is the only source of fuel (glucose) for the brain. This is a problem, as the injured brain cells now have a limited supply of fuel, but an increased demand for fuel as they attempt to repair themselves. This mismatch of fuel supply and demand leads to further cell injury and dysfunction.

It is thought that the disruption in the supply and demand of fuel is the key reason why people who have had a concussion are so susceptible to having symptoms worsen after an injury if they continue to be active and why there is a greater risk for further injury in the hours and days after a concussion. Studies suggest that it may take up to two weeks for the damaged cells to completely heal.