

H.I.T.T.-SHIELD

HITT-PG, LLC

High Impact Transfer Technology-Protective Gear

According with the dictionary of medicine the brain cavity is the space within the cranium occupied by the brain, its coverings and cerebrospinal fluid [<http://medical-dictionary.thefreedictionary.com/cranial+cavity>]. The propagation of the impact into the brain occurs, when the pressure wave that propagates through the brain during the stunning is initiated by the impact of an object into the skull. Pressure is a relationship between a force applied on a specific area. [Marie Nydahl; Simulation of Pressure Wave Propagation in the Brain, Master thesis] Concussions can damage the brain's white matter — the tissue that forms "cables" in the brain and allows different regions to communicate, according to the study. The researchers also found they could predict which players had depression by examining images of their brains' white matter, suggesting a link between white matter changes and depression. The types of brain damage that can occur as a result of being a professional football player have received increased attention in recent years. For example, there is growing awareness of a particularly severe [degenerative brain disease called chronic traumatic encephalopathy](#)(CTE). The disease has been linked to the deaths of Tom McHale, who played for the Tampa Bay Buccaneers, and Dave Duerson, who played for the Chicago Bears [<http://www.livescience.com/50163-football-cte-brain-disease-risk.html>].

The use of Dilatant fluids will create a negative pressure in interstitial fluid, which generates contact structure in the granular medium, then frictional resistance hinders rearrangement of the structure and solidifies the medium. Two types of thickening bands, namely, the bands with positive pressure and those with negative pressure; the negative pressure band is dominant over the positive one, thus the suspension exerts attractive net force between the inner and the outer walls. The contact force network in the granular media is expected to span in the compressing direction. Contrary to this intuitive picture, they show that dominant thickening bands are under negative pressure and extend in the stretching direction, namely, the system jams due to tensile stress [Shin-ichiro Nagahiro, Negative pressure in shear thickening bands of a dilatant fluid]

This negative pressure will reduce the amount of energy that will arrive to the brain and with this will reduce the probability of having concussions.

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