

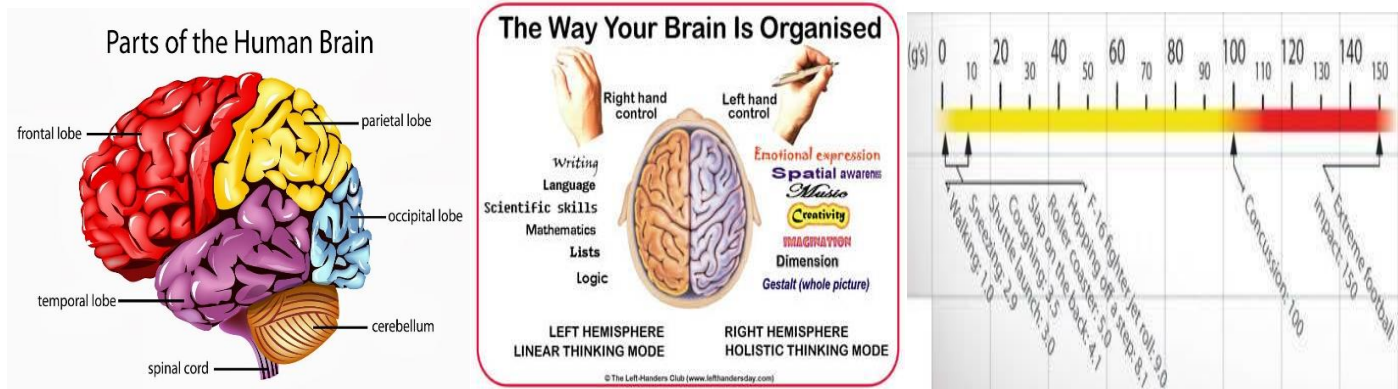
NEWTON'S 2ND LAW

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NFL's Concussion Settlement Has Paid Over \$500 Million in Less Than Two Years

The NFL estimated less than \$400 million in payouts over the first decade.



A settlement the NFL reached to resolve thousands of lawsuits from former players accusing the league of hiding information about the risks of repeated concussions took effect in January of 2017. Under the terms of the settlement — which awards players who develop Lou Gehrig's disease, dementia or other neurological problems caused by concussions from their pro careers as much as \$5 million — the NFL believed it would be paying out about \$400 million over the first decade. Well, it's a good thing the league has deep pockets. **(((According to one of the firms that repped the plaintiffs in the concussion litigation, the settlement fund distributed more than \$500 million in only 16 months))).** Given that amount, **the total settlement payouts are expected to reach as much as \$1.4 billion — almost a half billion more than the NFL first estimated.** "The fact that \$500 million in claims have been approved in less than two years proves that this settlement is fulfilling its promise to former NFL players and their families," said co-lead class counsel for the former NFL players Christopher Seeger. "We will continue to hold the NFL accountable and ensure every former player receives the benefits they deserve." **About 2,000 claims have been filed in less than two years.**

INTRODUCTION: In the middle graphic above you can see the brain is located within the hard-boney skull. Thus, when a football player stops suddenly (normally about 100 g of decelerationsee chart in upper right) the force causing the brain (F on brain) to stop was provided by the skull opposite to direction of motion of brain. Normal brains weigh about 3 lb.

QUESTIONS: (a) Find mass(in slugs) of brain?, (b) Find deceleration(a) in ft./s.² of brain in normal 100 g concussion collision? (c) Find force F on brain decelerating at -100 g?, (d) Football players normally are running at about 14 mph(V₀). Convert 14 mph to ft./s.?, (e) When football players are Stopped (V=0), the deceleration is -100 g find the average stopping distance(x = ? in units of ft. & inches) of the brain in the skull?,(f) Does the stopping distance in question (e) seem reasonable?

HINTS: F_{NET} = m a , weight = m g , g = 32 ft./s.² , 88 ft./s. = 60 mph , , V² = V₀² + 2 a X , , 12 inches = 1 foot

ANSWERS: (a) m = 0.09375 slugs, (b) -3,200 ft./s.² , (c) F = 300 lb., (d) V₀ - ~ 20.53 ft./s., (e) x = ~ 0.0659 ft. or 0.79 inch, (e) Considering size of brain in rigid hard skull, stopping in ~ 0.79 inches while decelerating at -100 g is very reasonable and plausible.