

Abstract Submitted
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What is Physics of Effectiveness of a Lacrosse Helmet¹ DIPTI SHARMA, KIMBERLY FARAH, Lasell College, Newton, MA — Concussions resulting from sports injuries have been gaining increased attention in the media. Failure to diagnose a concussion and allowing a player to return to full activities can cause harmful and permanent damage and may ultimately be lethal. When a player is allowed to reenter the game with a concussion, a subsequent concussion may result in Second Impact Syndrome. Second Impact Syndrome can be deadly because when the brain is already injured, the injured brain is at a much greater risk of being effected by a trauma than the normal brain. This secondary trauma causes an increased rate of swelling in the cranial cavity, which results in an increase in pressure on the brain. Head injuries can be prevented by wearing a properly functioning helmet. The goal in this undergraduate project was to test the amount of force that a lacrosse ball would exert on different conditioned heads: 1) an unprotected head, 2) a head with a properly worn helmet and 3) a head with a cracked and damaged helmet. The effectiveness of the above conditions was studied by dropping a lacrosse ball from a fixed height onto different conditioned heads. The amount of force applied to the head with each level of protection was determined through video analysis using logger pro software. Results indicated that wearing a proper helmet reduced forces on the head up to 73% compared to the control wearing no helmet. A defective helmet reduced force up to 22%. Hence, athletes who play a contact sport should always check for defects in helmets that they wear to ensure adequate protection from concussive forces.

¹The work was done by health major undergraduate students - T. Post, C. Lefebvre and N. Farrar.

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