

Abstract Submitted
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The Physics Behind Horse Jumping¹ DIPTI SHARMA, KIMBERLY FARAH, Lasell College, Newton, MA — This is an undergraduate project where we wanted to connect the concepts of force and acceleration with a fun-filled real world event which would result in an interesting way of applying physics at the undergraduate level. Horse jumping plays a major role in many equestrian sports and in this project, the biomechanics of jumping were the focus of the research. In this project, our goal was to find the effect of height of a horse's jump on the force exerted on horse's hooves when it landed. Logger pro software in conjunction with video analysis was used to determine the overall force. In the experiment, a rider jumped a horse over different height jumps keeping the other parameters the same i.e. approach tempo, horse, rider and environment. The force increased in a non-linear fashion, with a 10% increase in force when the jump height was raised from 2 feet to 2.5 feet and a doubling in force as the jump was raised from 2.5 to 3 feet. These results indicate that care should be taken when training to ensure that horses are only jumped as much as needed to improve their technique.

¹The work was done by health major undergraduate students - A. Scrutchfield, J.Reich and A. Berking

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