**Sports Article: Physics in Football []:**

All objects adhere to gravity, the ball behaves in many ways during a match in a way that abides to the physical laws of our world. The ball has a trajectory and movement which is dependent on many variables; It can rotate on itself depending on the air above/under it and on the kinetic energy transferred by the players’ leg. Furthermore, footballers are able to shoot a ball in a parabolic curve. This is achieved using the magnus effect. By kicking the ball off-center and rotating in horizontally a ball can be shot in a way that is hard for a goalkeeper to react to. In a penalty, considering the three factors; strength, precision, placing the ball and keeping it off the turf a shot can be about 90km/h which when aimed at a corner as said before, is impossible for a goalkeeper to react to.

A header can reach speeds up to 30km/h which is nothing exceptional compared to a footer which can reach up to 130km/h. A very impressive number. A very forgotten topic is the duration of impact, which ranges from 14-30 milliseconds. To explain, this means that the ball can exert forces up to 30 times the gravitational force on the players’ head. Furthermore, on speed, a player named Kylian Mbappe is known for his speed, he can reach a speed of 36km/h while controlling the ball by applying the right amount of force.

What changed in my mind in this article is the speeds that the ball can reach. I had the notion that the ball is moving fast but not at these speeds! It is very interesting that players can shoot a ball at 130km/h.

Another aspect is the magnus effect. I had no idea that the players were using physics to perfect certain shots to boost their chances of scoring a goal. Many techniques are based on scientific fact and it is very impressive.

The information provided in this article has refreshed my memory on physics. Furthermore, sports has always been integrated into society and thus, the improvement of sports will require better electrical equipment to showcase the events, better lights for the stadium and efficient medical solutions that all require electrical engineers to participate in.

Source: https://www.eetimes.com/newsletters/physics-in-football/