# Magnesmooth: Magnetizing the Ingenuity of Transportation

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In the modern day, transportation is everything. It's how we get to our daily destinations on time and quickly. Shock absorbers are being used on all vehicles on the road today. However, some modern shock absorbers are often labeled "rough riding" or "unstable". First, shock dyno tests were performed on the pistons that I designed last year. Next, I designed my own Electromagnetic Shock Absorber assembly to test with. My goal with the EMS testing was to see how the different weights and voltages would differ. It was hypothesized that the more voltage in an electromagnet, the stiffer the shock will react, and the less voltage, the softer the shock will feel. Ten different tests were run with a self-designed Electromagnetic Shock Absorber assembly. Each test sector was designed with more weight and more voltage to test the differences between the different weight-to-time ratios. All of the trial testing of the EMS (Electromagnetic Shock Absorber) was highly consistent. Significant differences ($P<0.05$) were seen between all groups indicating that weight and voltage affect piston travel time. I was highly impressed by how consistent the times were on the EMS results with the fluid I designed. These results supported the hypothesis. The more voltage you have in the electromagnets, the stiffer the shock will be, and the less voltage that you have, the less the shock will react to bumps and feel softer.

**Awards Won:**