Magnapole

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Standard pole straps lead to many thumb injuries. The goal of the project was to redesign the way a strap attaches to a ski pole to prevent injuries caused by the pole strap. Multiple prototypes were constructed in which the strap was replaced by a magnet that was easily attached to another magnet on the ‘Trigger S’ strap. As skiers increase in ability, it is desirable for the magnets to release at higher forces because as a pole is planted, increased stress is applied to the strap. The amount of force needed to separate the magnets was measured in Newtons on a Pasco force sensor. The prototype that met the needs of an advanced skier consisted of two magnets that were directly attached to each other without any type of covering. To determine if the amount of force needed to separate the magnets in the different prototypes was statistically significant t-tests with a 99% confidence were conducted. A few prototypes consisted of a fabric coating over the various magnets, and a different prototype has a polymer coverage. Different types of magnets and their coatings had a significant effect on the separation force between the magnets.

Awards Won: