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# Cycling and Energy: An Improved Gel Dispenser

Endurance cyclists need energy replacement. Consuming energy gels is the most viable option because they can provide a quick boost of energy in a concentrated form in a way that drinks and bars cannot. The task of opening, consuming, and disposing of packets of energy gels while cycling disrupts the rider's control of the bike and distracts his or her attention from the course ahead.

Through analysis and meeting with potential customers, we concluded that the best solution for and energy gel dispenser would be a rigid, pressurized container and would use mechanical compression to expel the gel. We then determined that the best method of mechanical compression would be a ratcheting plunger system. We ran continued to run tests and do analysis to further optimize the components of our ratcheting energy gel dispenser.

Once we had a prototyped device, we tested its performance in terms of our general and implementation specifications and compared the results to the existing gel-dispensing technology. We tested the force required to operate it, serving size, percentage of gel wasted, time to clean the device, interaction time, reloading time, and the number of hands required for use. We also measured size and weight. In terms of our key specifications (accessibility, use of hands, interaction time, and reliability)—rated most important by our target consumers—our prototype out-performed the competition in every category except reliability. Though our device could not match the convenience off the bike of gel packets, which involve no reloading or cleaning, it performed similarly to the gel flask in those categories with only a minor increase in cost.

Finally we developed a business plan for selling our product based on outsourcing the injection molding of our product and running the business ourselves out of a private operation.