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Medical Cushioning Using Slime

In doing this project we were hoping to find some positive answers to an uncomfortable situation. The purpose of this project is to engineer a better method for cushioning medical devices. Crutches are useful for the injured, but they are designed to be functional, not comfortable. Crutch pads were made to help, none have done the job, let's try something new, slime. Slime: a polymer and a cross-linker that when mixed become a non-Newtonian fluid. We chose 3 slime recipes (Basic, Butter, & Fluffy) and engineered a new one that we called Marshmallow slime. Next we did our testing. When conducting our experiment, first we created 3 batches of each slime for physical testing. We tested viscosity, elasticity, compression and recovery for each slime, then we vacuum sealed them. We analyzed the data to find which batch of each slime was the closest to the average. Then we attached each one to a crutch and covered them. Participants used crutches for 1 minute then filled out a survey that rated the pain level under each arm and said which crutch they preferred. Then the data was recorded and analyzed. In the end we found that all of the slimes were preferred over a rubber crutch pad. The two best slimes were Marshmallow and Butter, with Marshmallow preferred 75% of the time and Butter preferred 64% of the time. With some optimization of containment and attachment methods, Marshmallow and/or Butter slime could be used create a better experience for patients.