CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
Noah A. Kovacs

Project Number
J0313

Project Title
HomeMade Amputee Arm: H.M.A.A.

Abstract

Objectives/Goals
My objective was to make a homemade, functioning prosthetic hand.

Methods/Materials
High density styrofoam, small plastic gears, 6 Volt Battery, standard electronics kit motor were used to build the hand
An Arduino Uno Board and V-3 muscle sensor are used to make the hand open and close with muscle impulses.

Results
I created a functioning prosthetic hand that opens and closes on command using muscle impulses from the upper arm.

Conclusions/Discussion
My final project has a strong grip with extra space for shaking hands with someone, and grasping a ball. The hand also has a low density, so it will not stress patient's remaining stub. This system provides a low cost ($200 per hand) alternative to traditional, expensive prosthetics. My next steps include creating a stronger grip, and covering the device with a skin-colored rubber to provide a "true to life" appearance and feel. I would also like to add a discrete rechargeable battery back to power the system. My long term goals for this device include adding sensory tips to the fingers and palms that send nerve impulses back through the muscle sensors.

Summary Statement
My goal for this project was to create an amputee arm to provide a functioning prosthetic arm to those that cannot afford a traditional prosthetic.

Help Received
My teacher, Mrs. Faircloth, My mom, Evelyn Flores