**Abstract**

Millions of Americans’ upper extremities have been rendered useless or amputated due to injury or illness. Without strength and dexterity in the hand or wrist, these people are in need of tools to help them in everyday activities. The Ergo Knife offers these individuals a way to cope with this way of life as a device that can assist them, primarily in food consumption and can also be expanded to many other applications. The purpose of this project is to further develop the Ergo Knife so that it can better assist these individuals and improve the necessary processes used to produce the knife.

The design of the handle will be improved upon to create a better mechanical advantage and manufacturability of the product. This will be accomplished by increasing the strength of the parts design and the processes that go into the production. The project will encompass an analysis of how the handle works, the construction and design of the mold, and a description of part production will be examined and improved upon so that the parts can be made as efficiently and easily as possible. The molds will be made with silicone and the plastic used for the handle is a thermoplastic two part mixture. A cost analysis of the product is also provided in order to see how to further the project into mass production. Ultimately, the parts will be produced and tested so that they can be given to those suffering from upper extremity amputations, injuries, or loss of dexterity.